

MINE PLAN OF OPERATION AND CLOSURE/CLOSEOUT PLAN

ROCKY CLAIM EXPANSION PROJECT

**Chino Mines Company
GRANT COUNTY, NEW MEXICO**

Filed with:

US Department of Interior
Bureau of Land Management
Las Cruces District Office
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1.0 INTRODUCTION AND OPERATOR INFORMATION

Chino Mines Company (Chino) is proposing an expansion of the existing Santa Rita Pit at the Chino Mine located approximately twelve miles east of Silver City in Grant County, New Mexico. The proposed expansion will involve a small (20 acre) extension of the existing permitted Santa Rita Pit and will be developed to safely access ore on lands already permitted for disturbance. This small expansion request will allow Chino the ability to extend the mine life for the continued processing of copper-bearing ores at existing (permitted) leaching and concentration facilities. The proposed project will be known as the Rocky Claim Expansion and will be located on the southern edge of the existing Santa Rita Pit on U.S. Bureau of Land Management (BLM) land (Map 1).

The proposed Rocky Claim Expansion will increase the Santa Rita Pit permit area by less than approximately 6 percent. The planned expansion is located in Section 35, T.17 S., R.12 W. and will involve the removal of approximately 3.5 million tons of non economic material (waste/overburden). No new facilities are needed for waste/overburden placement or for the processing of ore that is accessed from the proposed Rocky Claims Expansion.

Mining in the proposed Rocky Claim Expansion is scheduled to take up to two years to complete. Mining will be conducted at an average rate of between 5,000 to 150,000 tons of material per day. The Rocky Claim Expansion will allow Chino the opportunity to access and produce approximately 280 million tons of ore containing approximately 880 million pounds of salable copper and 670,000 pounds of salable molybdenum. The proposed Rocky Claim Expansion will be mined using conventional open pit mining techniques and equipment.

The plan presented herein is a Mine Plan of Operations that references and incorporates an already approved Closure/Closeout Plan that has already been approved by the New Mexico Mining and Minerals Division (MMD). The primary purpose of this document is to satisfy BLM (43 CFR-3809) regulatory requirements for newly proposed activities that were not reviewed and approved in the most recent BLM evaluation at Chino (1996 EA).

1.1 OPERATOR INFORMATION

Project Name: Rocky Claim Expansion
Corporation Name: Chino Mines Company
Federal ID: 06-1038503
Partnership Information: Chino is a wholly owned subsidiary of Phelps Dodge Corporation

Property Ownership and Point of Contact Information:

Full Name: Richard N. Mohr
Title: President
Business Name: Chino Mines Company (Chino)
Telephone Number: (505) 537-4100
Street Address: P.O. Box 7, Hurley, New Mexico 88043
Project Location:
Meridian: NMPM
Section: SW ¼ of Section 35
Township: 17 S.

Range: 12 W.
County/State: Grant County/ New Mexico
Claim Type: Lode
Claim Owner's Address: P.O. Box 7, Hurley, NM 88043

BLM (Public Land Ownership) Contact Information

Name: US Department of Interior, Bureau of Land Management
Address: Las Cruces Field Office
1800 Marquess Street
Las Cruces, New Mexico 88005
Telephone: 505-525-4300

<u>Claim Name(s): BLM</u>	<u>BLM Serial Number</u>
Rocky Lode (10.35 acres)	NMMC# 26481
Goodenough Lode (9.30 acres)	NMMC# 26466
Nun #2 (0.35 acres)	NMMC# 26472

Total Acres of Surface Disturbance Anticipated:

Public (BLM) Acreage: 20 acres

Statement of Compliance:

Chino is in compliance with all Federal, State and local laws, regulations and ordinances that apply to this project (see Table 6, p. 4-1).

Statement of Basis (Right to Enter Property):

Chino has the right to enter and conduct mining and reclamation activities on the Rocky Claim Expansion project area based either on Chino's ownership of the unpatented mining claims in the project area and/or through the BLM approval of the enclosed MPO/CCP and subsequent Environmental Review of Chino's proposed activities on federal lands administered by the BLM in this area. As this portion of the rules requires, Chino will allow the Director to examine, if necessary, the documents which establish such basis.

2.0 MINE PLAN FOR ROCKY CLAIM EXPANSION

Expansion of the Santa Rita Pit will occur on 20 acres of BLM land (Map 1). Mining on the BLM Land will begin when all applicable permits are received and will continue for a period of up to two years. The mining limits and property ownership (surface and claims) are shown in a plan view in Map 2 and Map 6. Since this is overburden/waste removal to access ore elsewhere in the Santa Rita Pit, mining rates will vary between 5,000 to 150,000 tons per day as equipment is scheduled in this area. Total production from this portion of the pit will be approximately 3.5 million tons of uneconomic/waste material in order to access ore within currently permitted private (Patented) ground. Appropriate blasting patterns and an average bench height of 50 feet will enable cost-effective and safe mining.

Access/haul roads will be extended into the 20 acres of BLM Land for drilling, blasting and removal of overburden/waste. At the end of mining, all that will remain is a pit wall. Map 5 shows the final pit topography of the area of impact/mining. Based on the current mine plan, the Rocky Claim Expansion will have a pit rim elevation of approximately 7,100 feet AMSL. This expansion will not be the low point in the Santa Rita Pit. Electric power will be extended into the Rocky Claim Expansion area as required, from existing power lines and electric power substations. No mine dewatering or pipelines are needed for this proposed activity.

The material that will be mined from the Rocky Claim Expansion will be predominantly non-acid-generating. Some of the material mined from the Rocky Claim Expansion area will be segregated and saved to use as closure cover material for the Chino Mine. Other waste rock not suitable for use as cover material will be hauled to existing waste rock stockpiles at Chino.

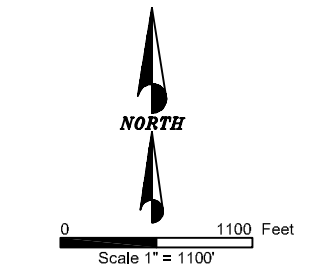
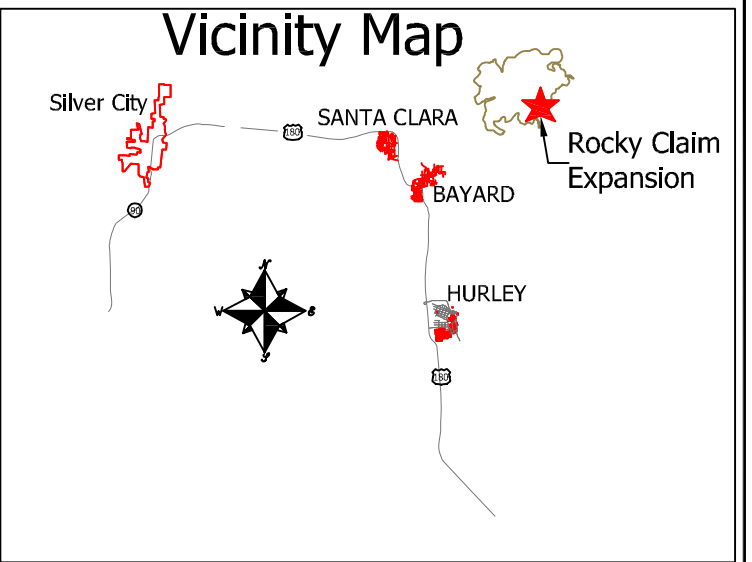
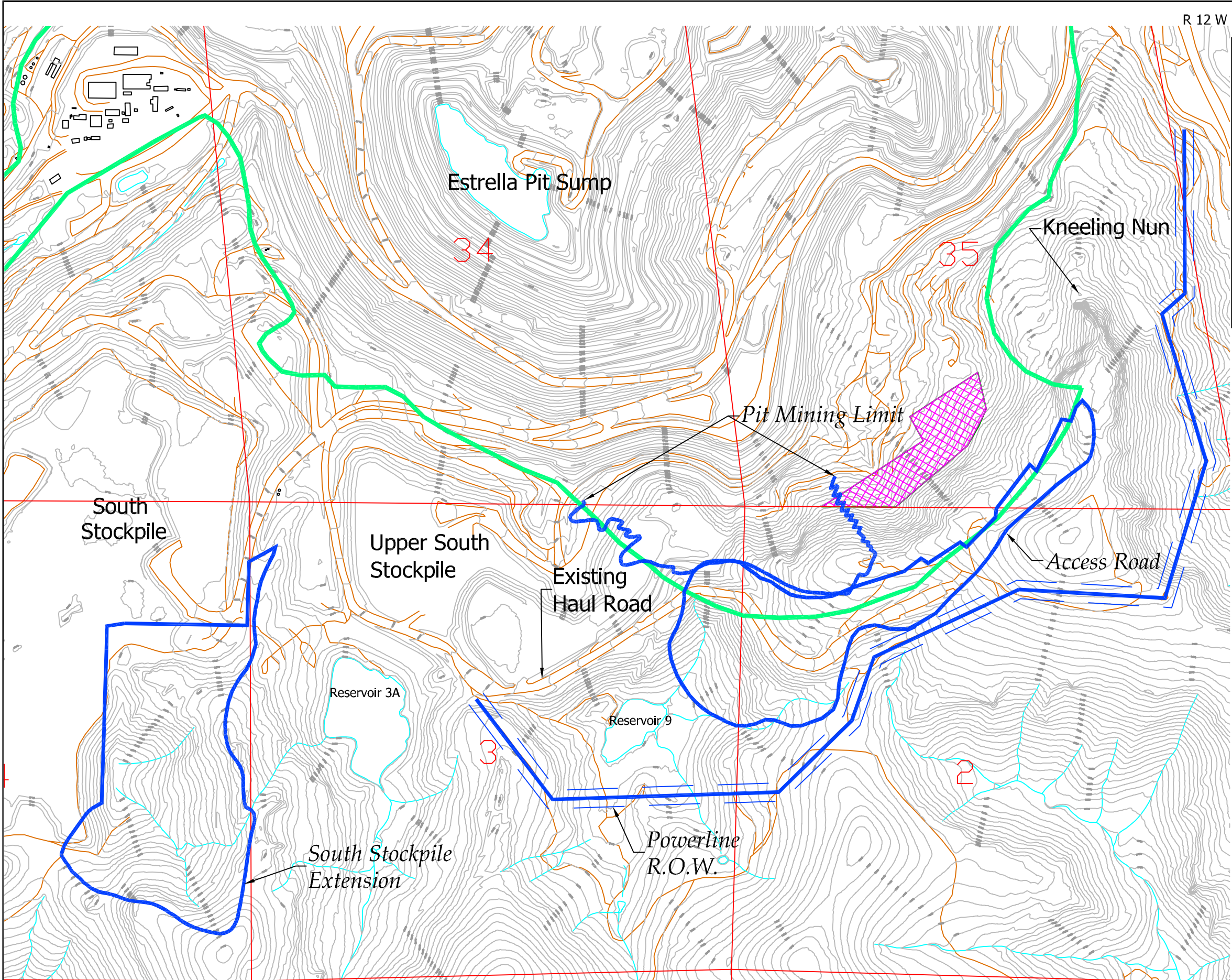
Existing utilities and services will be used to support the mining operation. The water supply for the Santa Rita Pit will not be affected by the development of the Rocky Claim Expansion. Additional water will not be required for mining of the proposed pit. Changes to the current water supply distribution system or the existing water treatment systems will not be required. The development of the Rocky Claim Expansion will not change the existing Chino power requirements. The existing Chino electric power distribution system will be used to provide power to the proposed pit utilizing extensions and interconnection of those systems when necessary.

2.1 MAPS




The following maps are provided in the MPO/CCP:

TABLE 1
LIST OF MAPS

Map	Features
Map 1 – Rocky Claim Expansion	Project Vicinity, Existing Mine Features, Proposed Expansion, Waste Rock Disposal Area, Haul Road
Map 2 – Property Ownership	Property Ownership
Map 3 – Sample Sites	Sample locations for ground and surface water, NPDES Outfalls, MMD design limits,
Map 4 – Reclamation Reference Area and Cover Material Stockpile Area	Revegetation Reference Area and Cover Material Stockpile Area
Map 5 – Rocky Claim Expansion Cross-Section	Cross Section showing Rocky Claim Expansion
Map 6 – Claim Boundary	Patented and unpatented mining claims



Legend

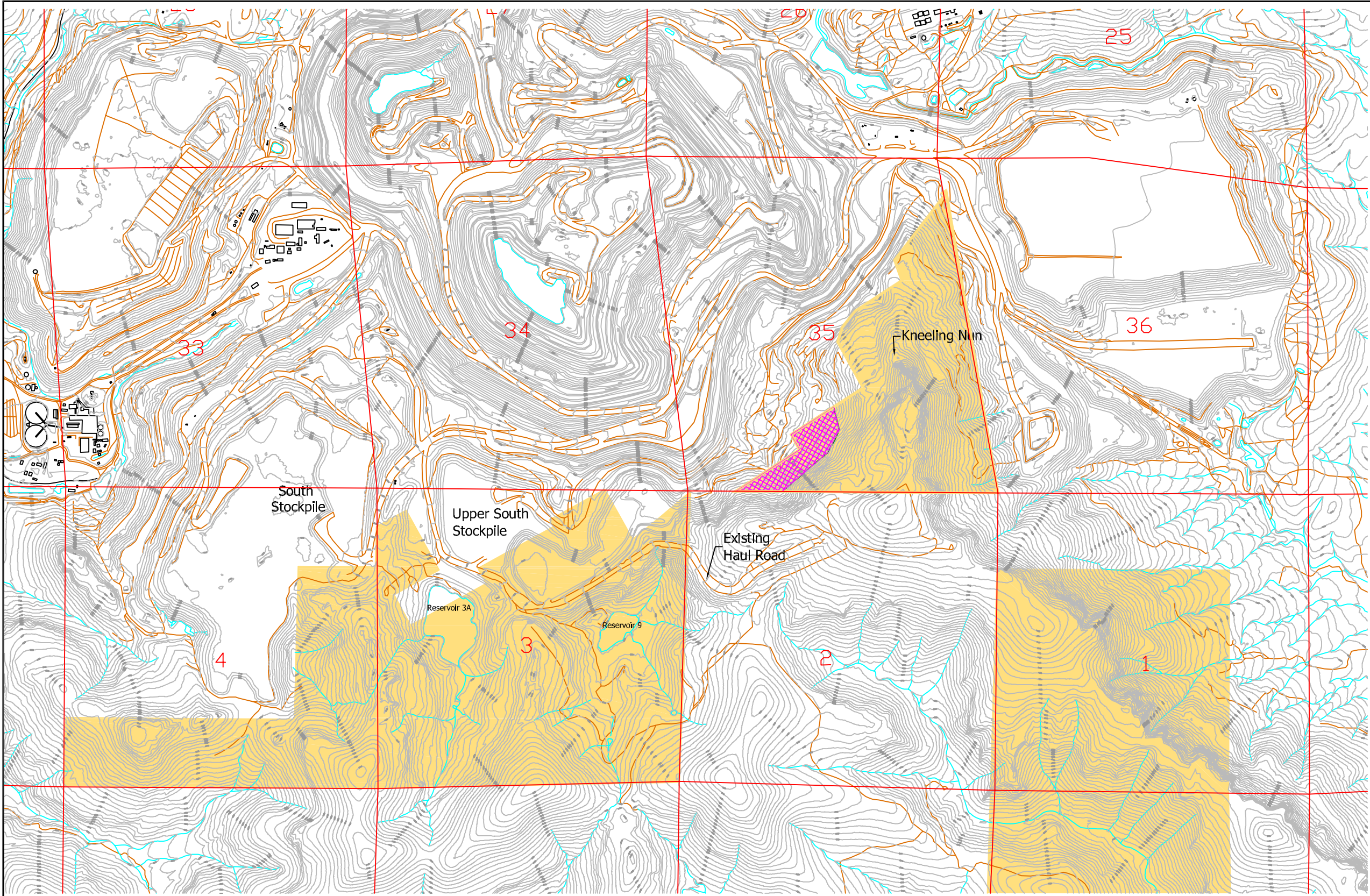
-  Proposed Pit Expansion
-  MMD Pit, Stockpile and Beneficiation Unit Design Limit
-  Previously Permitted Activities (BLM - 1996 EA)

Reference		Drawn By	SMG
		Designed By	
		Checked By	ELH
		Ch Eng Apprd	
DWG. NO.	DESCRIPTION		

Map 1 - Rocky Claim Expansion

 CHINO MINES COMPANY

Scale: As Noted	Date: 1/12/06
Dept. Environment, Land & Water	
Drawing No. SHEET ## OF ## SHEETS	Rev.





T 17 S
T 18 S



0 1800 Feet
Scale 1" = 1800'

Legend

-  Proposed Pit Expansion
-  BLM Land

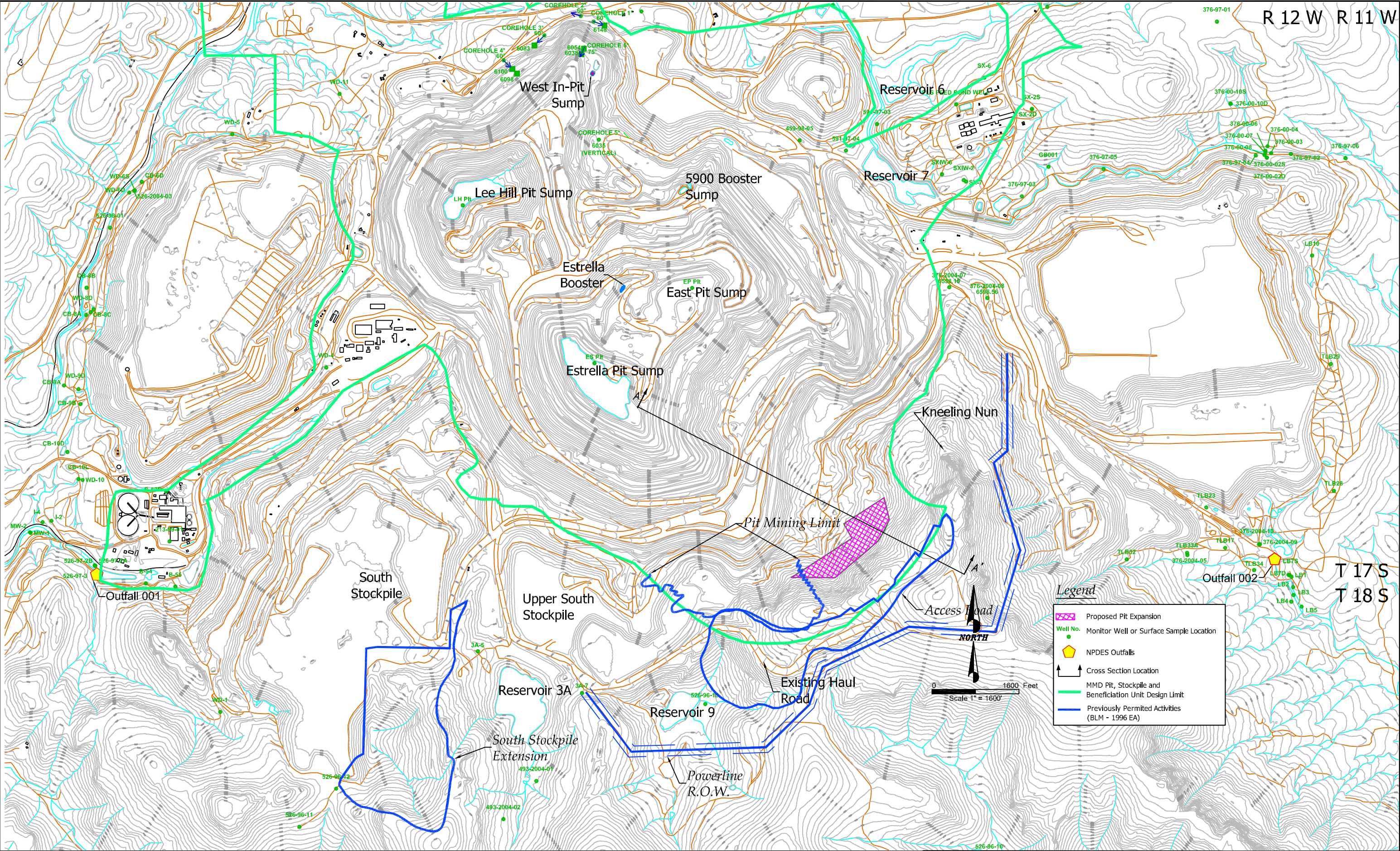
R 12 W R 11 W

Reference		Drawn By	SMG
		Designed By	
		Checked By	ELH
	DWG. NO.	Ch Eng Apprd	
DESCRIPTION			

Map 2 - Property Ownership

 CHINO MINES COMPANY

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Dept. Environment, Land & Water	
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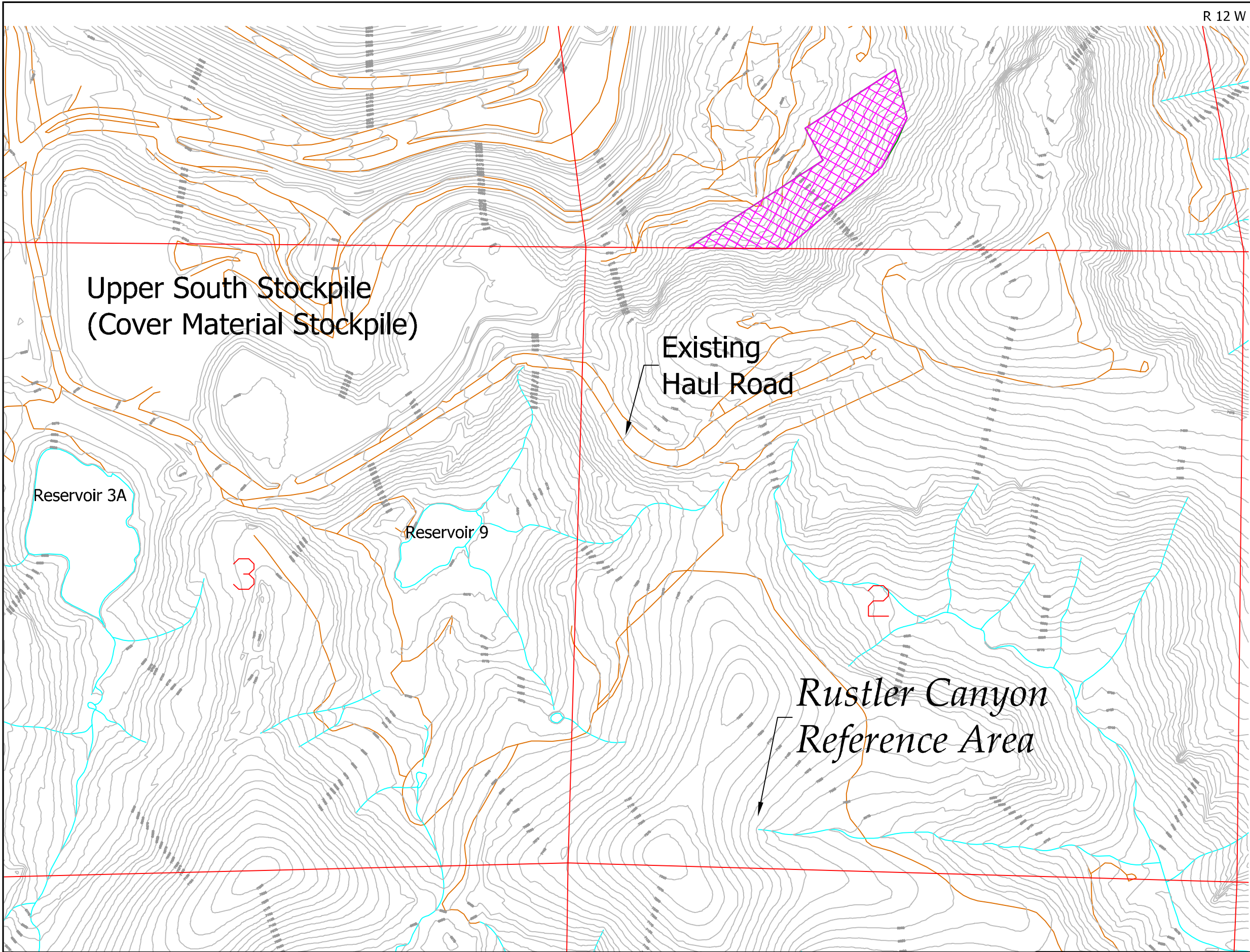


Reference		Drawn By	SMG
		Designed By	
		Checked By	ELH
		Ch Eng Apprd	
DWG. NO.	DESCRIPTION		

Map 3 - Sampling Sites

 CHINO MINES COMPANY

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Dept.	Environment, Land & Water		
Drawing No.	SHEET ## OF ## SHEETS	Rev.	



R 12 W
T 17 S
T 18 S

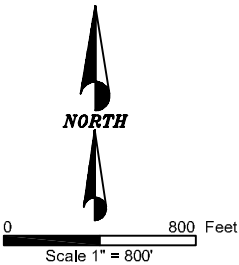
Upper South Stockpile
(Cover Material Stockpile)

Existing
Haul Road

Reservoir 3A

Reservoir 9

*Rustler Canyon
Reference Area*



Legend

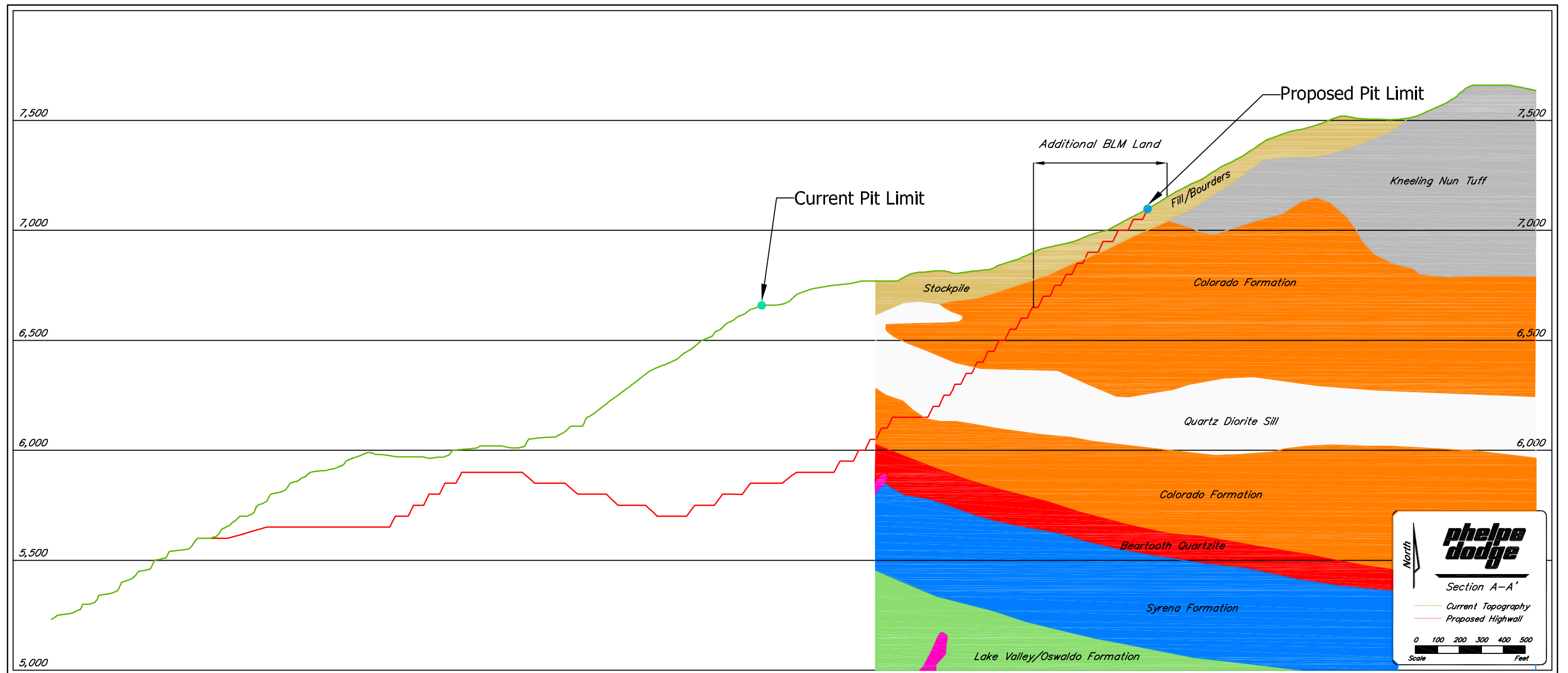
-  Proposed Pit Expansion
-  Cover Material Stockpile Area

Reference		Drawn By	SMG
		Designed By	
		Checked By	ELH
		Ch Eng Apprd	
DWG. NO.	DESCRIPTION		

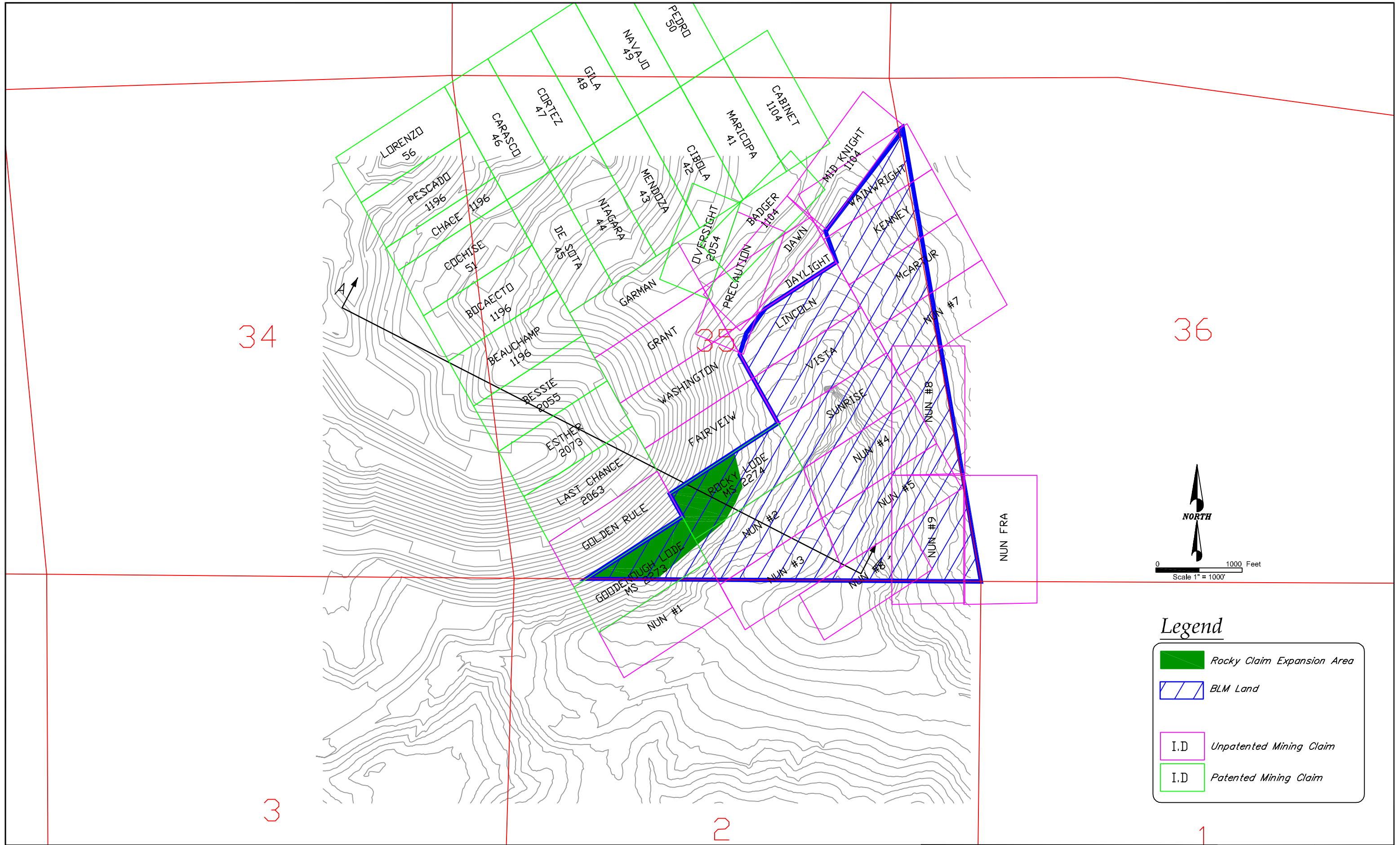
Map 4 - Reclamation Reference Area and Soil Stockpile Area

 CHINO MINES COMPANY

Scale: As Noted	Date: 1/13/06
Dept. Environment, Land & Water	
Drawing No.	SHEET ## OF ## SHEETS Rev.



Map 5 - Rocky Claim Expansion Cross Section



Reference		Drawn By	SMG
		Designed By	
		Checked By	GRD
		Ch Eng Apprd	
DWG. NO.	DESCRIPTION		

Map 6 - Claim Boundaries

 **CHINO MINES COMPANY**

Scale: As Noted	Date: 11/29/05
Dept. Environment, Land & Water	
Drawing No. SHEET ___ OF ___ SHEETS	Rev.

2.2 OPERATING PLANS

2.2.1 Operations History

Mining in the Santa Rita Pit began in 1910. In 1981, Chino submitted their first Plan of Operations (POO) to the BLM for review and approval. In 1996, Chino submitted an amendment to the POO that called for an additional 333 acres of mining related activities at the Chino Mine. The activities included; 1) removal of overburden, 2) construction of access roads, 3) construction of a stormwater diversion ditch, 4) relocation of a powerline, and 5) extension of the south-mine stockpile.

The BLM concluded in the Finding of No Significant Impact (FONSI)/Record of Decision (ROD) that there would be minimal or no impacts on surface water, groundwater, and air quality. The BLM further concluded that there would be impacts to one population of *S. macranthra* (Mimbres figwort) a Special Status plant species. However, that there would be little or no threat to the general *S. macranthra* population because there were other populations in the area. The BLM also concluded that the Kneeling Nun, a well known natural land mark would not be impacted, and imposed a 1000 foot buffer between mining operations and the Kneeling Nun Ridge. The BLM noted that two peregrine falcons, and endangered species, had been observed in the area. However, the BLM concluded that the peregrine falcons were already accustomed to mining operations. It was also concluded that the loss of wildlife habitat would not be significant due to the presence of similar habitat outside of the proposed areas of disturbance. One archaeological site (LA 111280) was determined to possible have historical significance. For this, the BLM required that data recovery be conducted prior to any surface disturbance.

2.2.2 General Operations

Proposed activities for the Rocky Claim Expansion include:

- Layback of the southern edge of the existing Santa Rita Pit (to include up to 20 acres of disturbance).
- Within the 20 acres of layback described above, Chino will extend the 24 kV power line to provide power to an electric shovel.

The temporary haul roads will be utilized to create the Layback. No haul roads will remain at the end of mining. The proposed expansion will not require the construction of new fences, gates or signs, as existing facilities will be used to support the Rocky Claim Expansion Project.

Temporary on-site development will include electric supply lines and haul roads. Lights will be used on equipment in the pit. Mining operations are exempt from the requirements of the New Mexico “Night Sky Protection Act.”

2.2.3 Surface Mine Operations

The proposed pit expansion will be mined using conventional open pit mining techniques and equipment. The pit expansion will be developed from the existing Santa Rita Pit. A haul road will be extended from the 6,800 feet (above mean sea level) elevation of the Santa Rita Pit and will progress downward as the expansion is mined. The location of these activities will not be the low point in the Santa Rita Pit. Electric power will be extended into the expansion as required from existing power lines and electric power substations along areas previously mined by Chino. There will be no additional disturbance of BLM land for

this proposed mining activity other than what has been requested in this amendment. The existing Santa Rita dewatering system, consisting of collection system, pumps, electric power supply, and pipelines, will be used to handle any pit dewatering that will be required. No chemicals, fuels, lubricants, or hazardous materials will be stored in the pit expansion area.

A BLM approved wire fence has already been constructed around the perimeter of the pit area to preclude the public, big game, and cattle from wandering into an active mining area while heavy equipment is being utilized for mining and reclamation purposes. The rims of the open pits readily accessible by the public will be blocked by a substantial rock berm and/or fencing.

Material Stripping Techniques

The mine site is located in an area of rugged terrain with rock outcrops, and boulder fields with minimal topsoil. Since topsoil is mostly nonexistent within the project area, no topsoil is proposed to be salvaged. Should salvageable topsoil be encountered during development, this material will be collected and stockpiled on the Upper South Stockpile for use in final reclamation. The proposed location for storage of any reclamation cover material if encountered is depicted on Map 4.

This entire proposed mining activity will be known as a pre-production period, allowing access to an approx. 280 million tons of ore located on previously approved/permitted private ground owned by Chino.

Drilling Techniques

Blasthole drilling for waste/overburden removal will be accomplished using Bucyrus Erie 60R and 49R rotary drills or equivalent. The rotary drills are crawler mounted and capable of drilling 12 ¼ inch diameter holes. A drill pattern, with an average of 27-foot spacing will be used in most cases. Other spacing and special practices are utilized in areas requiring special consideration for pit slope stability or rock fragmentation. Blastholes are drilled to develop benches with 50-foot heights based on ore control considerations and to allow for the effective use of drills and shovels. Subgrade drilling of six to seven feet below the bench is considered to be adequate to permit digging and result in a smooth bench floor. Appropriate drill patterns will be designed to allow for adequate fragmentation of the rock.

Blasting Techniques

The blast hole size is dictated by explosive density and explosives used per ton of broken rock. An explosives contractor will load the blast holes with bulk blasting agent (ANFO) or other appropriate agents, and delayed primer explosives that permit timing the sequence of initiation. The Chino blasting crew will carry out all other blasting functions.

The supplier of the blasting agents will utilize their existing, safe storage facility on Chino property. Transportation and storage of explosive materials will be conducted in a manner approved by all appropriate State and Federal regulatory agencies. There will not be an increase in explosive usage as a result of the development of the Rocky Claim Expansion.

Cuttings from the blastholes are sampled and assayed for determination of material type and to confirm that there is no copper grade. Material is designated as waste, leach ore, or low-grade leach. Blasting is normally done only during the day shift on a five-day per week basis. There may be isolated circumstances where a weekend blast may be necessary. When blasting, a Chino mine crew sleeves, primes and stems the blastholes, and an outside contractor dewateres and pumps blasting agents into the holes. Blasting agents in use at Chino include emulsions, ANFO, and aluminized ANFO. Minor secondary blasting is required for boulders and hard bench toes.

Benching Techniques

Mining will proceed along benches that will be drilled and blasted to 50-foot heights. The width of the bench will be dictated by safety considerations and pit slope considerations. The width will allow for the safe operation of haulage trucks with safety berms.

Load/Haul/Dump Techniques

Caterpillar and/or Komatsu trucks with the capacity to haul 190 - 340 tons will be loaded at the working face by an electric and/or hydraulic shovel. The trucks will haul each load of waste to the existing/permitted south waste stockpile system.

Production

Mining will be conducted at an average extraction rate of between 5,000 to 150,000 tons per day, depending upon mining schedules elsewhere in the pit.

Periods of Operation and Operating Hours

The mine will normally work two 12-hour shifts per day, 365 days per year.

Mine Dust Control

In general, open pits associated with mines do not experience significant mixing of ambient air below the pit rim with the air flow above the rim. Consequently, control of fugitive dust generating activity below the rim may not be required. However, should haul road fugitive emissions contribute to off-site impacts, Chino will provide for watering to the haul road as the primary method for controlling dust. Additionally, haulage speeds will average approximately 15 mph over the life of the project. Truck speeds will not exceed 33 mph. The maximum speed would only be attained when trucks are empty and on a flat road; speeds will be lower than average on other segments of the route; i.e., downhill empty, uphill empty, downhill loaded, and uphill loaded. These other segments represent the majority of the profiles associated with the mining on the Rocky Claim Expansion Area

The proposed action will not require a modification to the existing air quality permits or any additional air quality permit. Chino's mining operations are currently in compliance with state and federal air quality regulations and the proposed action will also be in compliance based on Chino's existing air quality permits.

Equipment Used On-site

The following table lists the equipment that may be used for mine production:

TABLE 2
EQUIPMENT REQUIREMENTS

Activity	Equipment
Loading	The existing Chino Loading Fleet (One Caterpillar 5230 hydraulic shovel, one Caterpillar 994 wheel loader , one Caterpillar 992 wheel loader or equivalent, one P&H 4100 electric mining shovel, one P&H 2800 electric mining shovel, and one P&H 2100 electric mining shovel) or equivalent.
Hauling	The existing Chino haul truck fleet of Caterpillar trucks (190 and 250 ton capacity) and Komatsu (340 ton capacity) will be used.
Drilling	The existing Chino drill fleet will be used; the fleet consists primarily of Bucyrus Erie 49-R and 60-R drills or equivalent.
Road Maintenance	The existing Chino road maintenance fleet, consisting of motor graders and bulldozers will be used. Existing water trucks will be used for dust suppression on the haul roads.
Mine Mechanical Service	Existing mine service trucks, maintenance equipment, and maintenance shops will be used.
Mine Service and Supervision	No changes will be made in the level of mine services and supporting equipment as a result of implementing the Rocky Claim Expansion.

2.2.4 Waste Rock

Approximately 3.5 million tons of barren rock will be placed in the already permitted Upper South waste stockpile system (depicted on Map 4). Based upon sampling results, the material that will be mined from the Rocky Claim Expansion is expected to be non-acid-generating Kneeling Nun Rhyolite Tuff formation material, therefore special handling methods are not necessary and the material should not pose any environmental concerns. See Section 2.4 below for back-up on supporting geochemistry.

2.3 WATER MANAGEMENT PLANS

Current and planned operations at the mine have been engineered to minimize water use, control contamination of groundwater, and prevent release of impacted surface water. Surface water and groundwater quality will be protected throughout the period of proposed activity, and following closure.

Groundwater

The groundwater gradient in the project area is toward the bottom of the Santa Rita Pit. Excavation of the Rocky Claim Expansion is not anticipated to change the direction of the flow of ground water.

New Mexico Environment Department (NMED) Groundwater Discharge Permit No. 459 (DP-459) for Chino was initially approved on April 23, 1987 and subsequently renewed and modified on April 6, 1992 and December 18, 1998. DP-459 was modified on December 18, 1998 to include the Santa Rita Pit. The latest DP-459 renewal and modification was issued by NMED on June 15, 2005, and includes conditions and specific requirements for operation, monitoring, and contingencies for facilities covered by this permit that have the potential to affect ground water quality including the Santa Rita Pit. Closure and the associated financial assurance requirements for the Santa Rita Pit are outlined in Supplemental Discharge

Permit for Closure DP-1340. Chino also holds other operational ground water discharge permits issued by NMED in the vicinity of the Santa Rita including DP-376, DP-493, DP-526 and DP-591.

Chino conducts quarterly monitoring of groundwater levels and groundwater quality in order to detect changes in groundwater that could occur from the mining operations. Monitor wells are completed in specific intervals such as bedrock fracture zones which minimize the potential for commingling of groundwater. Post-closure monitoring will be performed in accordance with the Chino Closure/Closeout Plan and the requirement of DP-1340. Map 3 shows the location of water monitoring sites for the project area.

Surface Water

None of the mining activities proposed under this MPO/CCP will directly affect waters of the US.

The existing Chino Storm Water Pollution Prevention Plan is consistent with the Clean Water Act's (CWA) National Pollution Discharge Elimination System requirements. The purpose of this plan is to minimize potential pollutant discharges to waters of the US and down-gradient impacts by implementing a plan for managing storm water runoff from Chino's facilities. Surface water discharges are monitored and reported to EPA pursuant to the Multi-sector General Permit Program. Chino also holds an individual NPDES permit issued by EPA for discharges into waters of the US. The two outfalls authorized in this permit are shown in Map 3.

Rock Characterization

The reserves associated with the Rocky Claim Expansion occur as copper oxides and sulfides. The waste material that will be mined from the expansion will be predominantly non-acid-generating volcanic geology and should not pose any environmental concerns. The waste material that is mined will be placed on existing permitted stockpiles. Material will not be placed outside of the existing Chino permitted disturbance footprint.

According to the geologic model for the Rocky Claim Expansion, 60 percent will be Kneeling Nun Rhyolite Tuff and Sugarlump Tuff and 40 percent of the material mined will be leach capping (quartz diorite sill and Colorado Formation).

In 1998 Chino conducted comprehensive geochemical characterization of the major rock types found in the Santa Rita Pit. This section summarizes the results of that characterization for the rock types associated with the Rocky Claim Expansion Area.

The Sugarlump Tuff and Kneeling Nun Tuff postdate the ore mineralization at Chino. Detailed descriptions of these units are included in a geologic report of the Santa Rita Quadrangle (Jones et al., 1967) and the units have recently been mapped in detail by Chino Geological Services technical staff. The Sugarlump Tuff is a poorly-consolidated gravel, sand and pumaceous tuff. The thickness of the Sugarlump Tuff varies from about 0 to 500 feet due to deposition over an irregular, eroded land surface, and it typically forms slopes. The Kneeling Nun Tuff is a massive welded to weakly consolidated rhyolite tuff. The Kneeling Nun Tuff overlies the Sugarlump Tuff. The Kneeling Nun Tuff is about 200 to 600 feet thick south of the Chino Mine, which is easily identified because of its cliff-forming habits. Recent mapping by Chino identified four members of the Kneeling Nun Tuff based on its composition (crystal vs. lithic fragments) and degree of welding.

The total sulfur in the samples ranges from 0.04 to 0.11 percent, with the highest sulfur concentration in the Sugarlump Tuff. The pyrite sulfur concentration ranges from 0.02 to 0.08 percent, also with the highest concentration in the Sugarlump Tuff. The acid neutralizing potential (ANP) ranges from 4.1 to 15.1 kg CaCO₃/ton, with the highest concentration in the Sugarlump Tuff as well.

The soil pH of the Sugarlump Tuff is 8.68, and the soil pH of the Kneeling Nun Tuff ranges from 6.98 to 7.87, or neutral to slightly alkaline. The mean soil pH is 7.4. These results are almost identical to the results presented in the waste rock characterization report for Kneeling Nun Tuff and Sugarlump Tuff samples (Golder, 1998)

The results of ABA testing performed to support previous permitting efforts, indicate that the Tertiary volcanics have a low sulfur content, and a correspondingly low potential for the acid generation. The mean ANP/AGP ratios based on total and pyritic sulfur are 3.5 and 4.8, respectively. New Mexico regulatory guidelines (NMED, 1996) indicate that waste rock with an ANP/AGP ratio of greater than 3 (based on total sulfur) is considered non-acid generating. No further acid-base accounting or kinetic testing is then required. British Columbia guidelines (Price, 1997) stipulate that waste rock with less than 0.3 percent pyrite sulfur and a paste pH equal to or greater than 5.5 is considered non-acid generating regardless of its ANP/AGP ratio, and recommend that no further testing be performed. Therefore, based on the present testing, the Sugarlump and Kneeling Nun Tuff can be designated as non-acid generating according to the New Mexico and British Columbia guidelines. The same conclusion was reached in the Waste Rock Characterization Report (Golder, 1998).

2.4 KINETIC TESTING

Although it was recognized that, based on the ABA results, kinetic testing to determine the acid generation characteristics of the Sugarlump and Kneeling Nun Tuff was not required, long-term testing was initiated to evaluate leachate composition. Humidity tests were conducted on three samples (on Sugarlump Tuff and Kneeling Nun Tuff composites A and B) for a total of 20 weeks. Leachate samples were collected weekly for analysis of standard parameters (pH, conductivity, alkalinity, acidity, calcium, iron, and sulfate). Samples collected at week 0, 1, 5, 10, and 20 were analyzed for a full suite of metals. Leachate for week 15 was collected but not analyzed for the comprehensive metals suite due to low metals concentrations in the previous samples. No humidity cell testing was performed on the Tertiary volcanics during the earlier waste rock characterization effort. The emphasis of the previous investigation was on rock types that could adversely impact the environment, and it had been recognized that the Tertiary volcanics were unlikely to do so.

2.4.1 Standard Parameters

This section describes the behavior of the standard parameters during the humidity cell testing.

Sugarlump Tuff (sample 10622)

The pH of the Sugarlump Tuff sample is consistently neutral to slightly alkaline, ranging between 7 and 8 throughout the 20 weeks of testing. Conductivity decreases over the test duration. No detectable acidity or sulfate is produced during the testing. The release of calcium and alkalinity gradually declines over the testing duration. Iron concentrations are generally non-detect over the testing, except at week 3 and 20.

Kneeling Nun Tuff (composite samples A and B)

Samples 10623 through 10626 of the Kneeling Nun Tuff were composited into two replicate samples (A and B) for humidity cell testing. The pH of both leachates ranges between 6.5 and 7.5 over the duration of the testing, which is slightly lower than the pH of the Sugarlump Tuff sample. The conductivity gradually decreases over the test duration, as does the alkalinity. Acidity and sulfate are not detected during the testing. Iron is observed only in leachate from Composite A over the first four weeks of testing.

2.4.2 Comprehensive Metals Analysis

Leachate samples for comprehensive metals analysis were collected at week 0, 1, 5, 10, 15, and 20 during the testing. The samples from week 15 were not analyzed as the results of the week 10 samples indicated very low to non-detect concentrations of metals.

Sugarlump Tuff (sample 10622)

The concentrations of most metals are below the detection limit. Leachate quality is relatively constant throughout the testing. When constituents are detected, concentrations generally decrease over time. The following metals are detected at low concentrations during the testing:

- aluminum;
- barium;
- boron;
- copper;
- iron;
- manganese;
- mercury; and
- zinc.

Kneeling Nun Tuff (composite samples A and B)

The concentrations of most metals are below the detection limit. Leachate quality is relatively constant throughout the testing. When constituents are detected, concentrations generally decrease over time. The following metals are detected at low concentrations during the testing:

- aluminum;
- barium;
- boron;
- copper;
- iron;
- manganese;
- molybdenum, and
- zinc.

By week 20, the two leachates from composite samples A and B are very similar. Also, with the exception of molybdenum and mercury, the same metals are detected in leachates from the Sugarlump and Kneeling Nun Tuff.

Static testing was conducted on one sample of Sugarlump Tuff and four samples of Kneeling Nun Tuff. The results of the static testing are as follows:

- The rocks contain less than 0.11 percent total sulfur and less than 0.08 percent sulfide/pyrite sulfur;
- The ANP/AGP (tot-S) ranges from 2.2 to 4.4, while the ANP/AGP (pyr-S) ranges from 3 to 6.8;
- Paste pH values from the five samples ranges from 7.0 to 8.7, indicating neutral to alkaline conditions; and
- No sulfide minerals are identified in either macroscopic evaluation or XRD analysis.

The static testing therefore indicates that both the Kneeling Nun Tuff and Sugarlump Tuff can be considered non-acid generating. No further kinetic testing would therefore be required to determine the long-term acid generation potential.

To evaluate long-term leachate composition, kinetic testing was conducted over a 20-week period. The results of the kinetic testing are as follows:

- The pH of the leachates ranges from 6.5 to 8 and remains approximately constant throughout the testing;
- Metals concentrations in the leachates are at or near their respective detection limits;
- For the large majority of metals, concentrations in the leachates are lower than concentrations in groundwater or surface water in the Rustler Canyon area; and
- Metal concentrations in leachates do not exceed NMWQCC criteria.

The kinetic testing results indicate that both the Sugarlump Tuff and the Kneeling Nun Tuff are not anticipated to generate a leachate that is acidic or contains elevated metals concentrations.

The composition of leach capping is predominately Colorado Formation. The sample collected also underwent kinetic and static testing and were found to be non-acid generating.

2.5 QUALITY ASSURANCE PLANS

Chino maintains a number of plans that contribute to the overall quality of the Chino Mine. These plans include:

Plan Type	Description
Group Safety Plans	Safety plans developed by each work group specific to their work environment.
Code of Safe Practice	The purpose of the General Code of Safe Practices is to provide all employees and contract employees with proven safe practices that are common to all Phelps Dodge, North America Operations.
Water Quality Monitoring Plans	Plans for monitoring the quality of groundwater related to each discharge plan.
Water Sample Collection QAP	Procedures for assuring the quality of water samples collected for monitoring the quality of groundwater.
Ore Control Sampling QAP	Procedures for assuring the quality of samples used to determine the content of copper at the working face.
Laboratory Analytical Protocols	Procedures used to determine the quality of data generated by analyzing rock samples for ore control.
Equipment Preventative Maintenance Schedule	Schedule for conducting regular servicing for each piece of equipment used at Chino
Environmental Management System	Chino's management system to identify, monitor and control its environmental aspects.
SX/EW Cathode QAP	Procedures for assuring the quality of copper produced at the SX/EW.

2.6 SPILL CONTINGENCY PLANS

Chino has an Emergency Response and Spill Contingency Plan for operations. The plan addresses procedures necessary to respond to upset conditions at the mill and tailings facilities and within the SX/EW plant and associated facilities such as pipelines and raffinate storage tanks. The Rocky Claim Expansion area has no SX/EW facilities or other facilities which carry or store potential spill solutions.

Chino operates under an approved Spill, Prevention, Control and Countermeasure Plan (SPCC), and all mining activities will conform to existing permits. No fuels, lubricants, chemicals, or hazardous materials will be stored in the Rocky Claim Expansion area.

2.7 SCHEDULE OF OPERATIONS

Mining in the proposed Rocky Claim Expansion is scheduled to begin when all applicable permits are received. Mining will be conducted at an average rate of between 5,000 to 150,000 tons of material per day. The pit expansion will allow Chino access to ore outside of the Expansion area, which will produce 880 million pounds of salable copper and 670,000 pounds of salable moly. Table 3 summarizes the general activities at the mine and the approximate time frame in which these activities will occur. The mining related activities on BLM land could take up to two years to complete, depending upon permit authorization, copper prices and mine economics.

TABLE 3
SCHEDULE OF MINING ACTIVITIES

Schedule	Activity	Total Material Mined (Tons)	Material Mined from BLM Land (tons)
Quarter 1	Pioneering, finish 7150 bench (on private already permitted ground)	368,000	0
Quarter 2	Pioneering, finish 88% of 7000' bench	826,000	0
Quarter 3	Pioneering/Production, finish 33% of 6800 bench	5,560,000	1,409,000
Quarter 4	Production, finish 28% of 6700' bench	10,800,000	1,409,000
Quarter 5	Production, finish 43% of 6650' bench	10,920,000	370,000
Quarter 6	Production, finish 38% of 6600' bench	11,040,000	159,000
Quarter 7	Production, finish 20% of 6550' bench	11,040,000	78,000
Quarter 8	Production, finish 70% of 6550' bench	10,800,000	27,000
Quarter 9	Production, finish 60% of 6500' bench	10,920,000	0
Quarter 10	Production, finish 6500' bench	6,167,000	1,000

2.8 ACCESS ROADS AND UTILITIES

Access Roads

Access to the pit expansion will be through the existing Chino Mine and Santa Rita Pit. A series of temporary haul roads will be constructed from the existing operations into the pit expansion. The largest vehicle that will use the haul roads is the 340-ton haul truck. All haul roads are designed to safely accommodate the largest vehicle to use it; therefore the road will be built with a width of 120 feet, including appropriate safety berms. Road slope grades will be no greater than 10 percent. All other equipment included in the list of mine equipment may also use the roads. There will be no other access roads across federal lands to the pit.

Utilities

Electric power will be extended into the pit expansion area to operate the electric mining shovels and drills. The utility line will be placed in previously disturbed areas along the proposed haul road into the pit.

Additional water will not be required for mining of the pit expansion. Changes to the current water supply distribution system or the existing water collection systems will not be required.

There will be no change to the existing sewage treatment system at Chino. Nor will there be an increase in sewage as a result of the development of the pit expansion. Solid wastes generated at Chino will be managed by the existing Chino facilities, following established procedures. Secure garbage containers will be placed near the site as necessary. Bulk refuse items will be sorted and disposed of in accordance with the current approved practice at Chino. Non-mine waste disposal will not be allowed on the parcels and claims in this proposed MPO/CCP. Solid refuse will be removed from the affected lands and disposed of in accordance with the current approved practice at Chino. Chino operates a Solid Waste Landfill for on-site waste and is authorized by the New Mexico Environmental Department.

3.0 RECLAMATION PLAN

As stated earlier, the primary purpose of this MPO/CCP is to satisfy BLM (43 CFR-3809) regulatory requirements. A critical component to both regulatory requirements is the development and submittal of a Reclamation Plan.

However, the only facilities remaining on BLM controlled ground (associated with the Rocky Claim Pit Expansion) will be pit walls and a safety berm on the up-gradient portion of the pit. Therefore, the only item proposed for reclamation is the revegetation of the safety berm.

Chino will coordinate with New Mexico State agencies (primarily MMD and NMED) and the BLM during the reclamation process to ensure that the reclamation meets state and federal requirements. The plan is intended to complement the Chino CCP approved on December 18, 2003 with the approval of the Chino Mine permit GR009RE by MMD. The plan provided herein is at a plan level of detail (sufficient for cost estimating), but flexible to allow for detailed adjustments in response to unforeseen contingencies. The reclamation plan may change in response to scientific advancements and operational considerations as appropriate in the future. The BLM and MMD will be notified of changes if they become necessary.

The objectives of reclamation are to minimize potential public safety hazards, provide for long-term stability of the site, protect the quality and integrity of groundwater and surface water, and produce a site capable of supporting the approved post-mining land use.

3.1 RECLAMATION AND REVEGETATION PRACTICES

The revegetation and reclamation practices applied to the Rocky Claim expansion area will be consistent with those approved for the Chino Mine as a whole. Consistent with the approved post-mining land use, areas proposed for revegetation will be seeded using the same seed mixture developed for the Chino Mine CCP (Table 4). Substitutions may be necessary due to seed availability and will be coordinated with the state and federal agencies.

Conventional drill-seeding methods used on medium textured soils (to be applied to the safety berm) with considerable rock fragment content are probably not applicable to the Rocky Claim Expansion Project. Thus, alternative methods are proposed in consideration of the soil and topdressing conditions that exist at the site. The seedbed will be prepared by ripping the topdressing to a depth of 24 inches. The ripped furrows will be oriented across the slope and the surface will be left in a roughened condition to reduce overland flow and promote the infiltration of water. This soil surface configuration and the high rock fragment content of the topdressing preclude the use of a drill seeder. Therefore, the seed will be broadcast and covered using a chain or tire-drag. Straw or native grass mulch will be applied at a rate of at least two tons/acre and stabilized using a tackifier emulsion or by crimping. Long-stem mulch is preferred over shorter materials. The mulch should be weed free and contain a minimum of viable seeds associated with the mulch source (e.g., barley or wheat seeds).

3.2 RECLAMATION OF SITE ACCESS AND HAUL ROADS

No applicable as no haul roads will remain following mining. Only pit walls will remain.

TABLE 4
PROPOSED INTERIM SEED MIX AND RATES FOR THE
ROCKY CLAIM EXPANSION AREA
CHINO MINE

Species ^a	Life-Form	Duration ^b	Seasonality	Rate ^{a,c}
Primary				
Blue grama (<i>Bouteloua gracilis</i>)	Grass	Per	Warm	0.25
Side-oats grama (<i>Bouteloua curtipendula</i>)	Grass	Per	Warm	1.25
Black grama (<i>Bouteloua eriopoda</i>)	Grass	Per	Warm	0.10
Green sprangletop (<i>Leptochloa dubia</i>)	Grass	Per	Warm	0.15
Plains lovegrass (<i>Eragrostis intermedia</i>)	Grass	Per	Intermediate	0.05
Bottlebrush squirreltail (<i>Sitanion hystrix</i>)	Grass	Per	Cool	1.25
New Mexico needlegrass (<i>Stipa neomexicana</i>)	Grass	Per	Cool	1.75
Streambank wheatgrass (<i>Agropyron dastachyum</i> v. <i>riparium</i>)	Grass	Per	Cool	1.50
Apache plume (<i>Fallugia paradoxa</i>)	Shrub	Per	NA	0.10
Mountain mahogany (<i>Cercocarpus montanus</i>)	Shrub	Per	NA	1.00
Winterfat (<i>Eurotia lanata</i>)	Shrub	Per	NA	0.60
Yellow sweet clover (<i>Melilotus officinalis</i>)	Forb	Ann	NA	0.15
Globe mallow (<i>Sphaeralcea</i> sp.)	Forb	Per	NA	0.10
Blue flax (<i>Linum lewisii</i>)	Forb	Per	NA	0.15
Total PLS (lb/ac)				8.40
Alternate				
Needle-and-thread (<i>Stipa comata</i>)	Grass	Per	Cool	ND
Thickspike wheatgrass (<i>Agropyron dastachyum</i>)	Grass	Per	Cool	ND
Smooth brome (<i>Bromus inermis</i>)	Grass	Per	Cool	ND
Sand dropseed (<i>Sporobolus cryptandrus</i>)	Grass	Per	Intermediate	ND
Tobosa (<i>Hilaria mutica</i>)	Grass	Per	Warm	ND
Bush muhly (<i>Mohlenbergia porteri</i>)	Grass	Per	Warm	ND
Squawberry (<i>Rhus trilobata</i>)	Shrub	Per	NA	ND
Rubber rabbitbush (<i>Chrysothamnus nauseosus</i>)	Shrub	Per	NA	ND
Prairie coneflower (<i>Ratibida columnaris</i>)	Forb	Per	NA	ND
White sweet clover (<i>Melilotus alba</i>)	Forb	Ann	NA	ND

^aSeed mix and rates are subject to change based on future investigations.

^bPer—Perennial; Ann—Annual

^cRate is in pounds of pure live seed (PLS) per acre (lb/ac); substitutions may change seeding rates.

PLS = Pure live seed

NA = Not applicable

ND = Not determined

3.3 HISTORICAL OPENINGS AND EXPLORATION DRILLING SITES

No known historical openings are present within the proposed Rocky Claim Expansion area.

However, if unknown openings are discovered, they will be abandoned per requirement of Section 19.10.5.508.B.1.a of the New Mexico Mining Act. These openings will either be blasted shut and/or the openings filled/closed to preclude access and safeguard the openings from unauthorized entry.

Four exploration drill holes D2233 (Rocky), D1906 (Good Enough), D1906 (Good Enough), GO-2 (Good Enough) were drilled in the Rocky Claim Expansion area.

3.4 PROCESSED ORE AND WASTE ROCK RECLAMATION

There is no ore associated with the Rocky Claim Expansion.

Waste rock/overburden generated from the Rocky Claim Expansion will be placed in the already permitted South and Upper South Stockpile system and will be reclaimed in accordance with the approved Chino CCP.

3.5 PREGNANT LEACH SOLUTION AND RAFFINATE PONDS

No pregnant leach solution or raffinate ponds will be constructed in association with the mining of the Rocky Claim Expansion. Reclamation management of existing facilities is described in the Chino CCP.

3.6 MINE AND PLANT FACILITIES

No new plant facilities will be constructed in association with the mining of the Rocky Claim Expansion. Reclamation of existing facilities is addressed in the Chino CCP.

3.7 OPEN PIT

Over time, spalling of the benches and high-walls will create wedges of unconsolidated materials that will eventually support vegetation. Thus, the pit walls are predicted to ultimately reach a condition that mimics nearby steep canyon walls. The pit wall of the expansion area will not be below the groundwater level and is not predicted to be covered by a pit lake. It is not anticipated that there will be any flat areas (other than safety benches). Therefore, no active reclamation of the pit wall is proposed. The Mining and Minerals Division conditionally approved Chino's waiver request from reclaiming the Santa Rita Pit walls to a self sustaining ecosystem, provided that Chino protect ground and surface water quality.

3.8 POST MINING LAND USE

The principal land uses surrounding the Santa Rita Pit include range, mining, and wildlife habitat. The New Mexico Mining Act (NMMA) requires that a post mining land use (PMLU) be selected for the permit area. The designated post mining land use for the Chino Mine permit area is predominately wildlife habitat. However, Chino has selected industrial use for buildings that will remain following mining and reclamation. In addition, Chino has requested a waiver (allowed under MMD regulations) for the Santa Rita Pit.

The selection of the wildlife habitat PMLU for purposes of the NMMA does not preclude multiple beneficial uses (e.g., grazing, recreation, and watershed where appropriate) in the post-closure period by the surface landowners (e.g., BLM). The reclamation of the disturbed areas will result in conditions that are consistent with a variety of land uses.

3.9 THE SANTA RITA PIT

Successful implementation of the proposed reclamation plan will result in the development of an early-stage grass/shrub community within a larger plant community that is dominated by a mixed-evergreen woodland community (Safety Berm Area Reclamation). The areas of cliffs and talus associated with the pit walls will provide features that are consistent with nearby approved pit walls.

The wildlife populations around the Santa Rita Pit include big game species, small mammals, seasonal and residential birds, and reptiles and amphibians (BLM 1996). The proposed seed mix was designed primarily to provide erosion control and promote soil developmental processes, but also provides important features for wildlife. Table 5 lists some of the major functional attributes of the vegetation selected for use at Chino. Besides providing erosion control, the vegetation will provide forage, seeds, and cover for small mammals and birds. The reptiles, small mammals, and birds common to the mine area will benefit from the increased insect populations that are likely to accompany revegetation of the site. The shrubs, grasses, and forbs selected for use at Chino will provide nutritious forage and browse for large mammals (e.g., deer). In addition, the seed mix includes a number of valuable forage grasses that are absent or occur at a low frequency outside the permit area, thus, improving the range condition locally.

3.10 RECLAMATION SCHEDULES AND RECLAMATION SUCCESS CRITERIA

The NMMA requires the development of a schedule indicating the anticipated initiation and duration of the reclamation activities. The schedules included below are based on the current mine operational plan, copper price and economics. The reclamation success criteria required by the MMD vary depending on the designated PMLU. The revegetation success criteria for the wildlife habitat PMLU are based on canopy cover, shrub density, and plant species diversity.

3.10.1 Reclamation Schedule

Reclamation activities at Chino are expected to occur episodically during mine operations, followed by final closure of the mine after metal extraction ceases. Reclamation activities will be conducted in association with periods of active mining when equipment is available for earth moving.

Assuming approval of the MPO/CCP in 2006, mobilization will commence shortly thereafter. Mining on BLM Land will continue for up to two years, depending upon economics. Following this, the mining fleet will de-mobilize and the reclamation described earlier in Section 3.0 will begin. Current plans call for reclamation to be initiated in 2008 or 2009 (depending upon when mining actually begins), with the majority of earthmoving activities (grading, ripping, and seeding) completed in 2009. Monitoring will occur until post mining land uses have been achieved and the agencies (BLM, MMD, and NMED) have signed-off on completed reclamation activities.

TABLE 5
FUNCTIONS AND ATTRIBUTES OF THE PRIMARY PLANT SPECIES
PROPOSED FOR THE CHINO MINE RECLAMATION SITES

Species	Character ^a	Attributes and Function
Blue grama (<i>Bouteloua gracilis</i>)	N,P,W,G	Sod and bunch grass providing ground over and forage
Side-oats grama (<i>Bouteloua curtipendula</i>)	N,P,W,G	Bunch grass providing ground cover and forage
Black grama (<i>Bouteloua eriopoda</i>)	N,P,W,G	Bunch grass providing ground cover and forage
Green sprangletop (<i>Leptochloa dubia</i>)	N,P,W,G	Erect bunchgrass; aggressive short-lived nurse plant with forage value
Plains lovegrass (<i>Eragrostis intermedia</i>)	N,P,W,G	Bunch grass providing ground cover and early spring forage
Bottlebrush squirreltail (<i>Sitanion hystrix</i>)	N,P,W,G	Persistent (moderately palatable) bunch grass providing ground cover
New Mexico needlegrass (<i>Stipa neomexicana</i>)	N,P,W,G	Persistent bunch grass providing ground cover and forage
Streambank wheatgrass (<i>Agropyron dastachyum</i> v. <i>riparium</i>)	N,P,W,G	Sod-forming grass providing ground cover and forage
Apache plume (<i>Fallugia paradoxa</i>)	N,P,S	Mid-height shrub providing browse, cover, and erosion control
Mountain mahogany (<i>Cercocarpus montanus</i>)	N,P,S	Mid-height to tall shrub providing browse and cover
Winterfat (<i>Eurotia lanata</i>)	N,P,HS	Low shrub providing winter browse
Yellow sweet clover (<i>Melilotus officinalis</i>)	I,A/B,F	N-fixing forb providing forage and ground cover
Globe mallow (<i>Sphaeralcea</i> sp.)	N,P,F	Persistent mid-height forb providing browse
Rubber rabbitbush (<i>Chrysothamnus nauseosus</i>)	N,P,S	Mid-height shrub providing cover and erosion control
Blue flax (<i>Linum lewisii</i>)	N,P,F	Persistent forb with a pretty blue flower

^aN = Native

I = Introduced

P = Perennial

A/B = Annual or biannual

W = Warm season

C = Cool season

G = Grass

S = Shrub

HS = Half shrub

F = Forb

3.10.2 Revegetation Success Standards

Revegetation success will be evaluated relative to the Interim Technical Standards for Revegetation Success for the Chino (MMD Permit GR009RE). These standards are based on the interpretation of site-specific data collected from reference areas and reclaimed lands. Environmental, topographic, jurisdictional, and economic constraints require that different levels of effort be applied to the disturbed areas. In particular, some of the pit walls cannot practicably be treated using standard reclamation techniques; thus, no revegetation success criteria are proposed for the pit walls. All other existing and future disturbance areas will be reclaimed and evaluated with respect to the reclamation success standards proposed for the Chino Mine. Chino will meet the revegetation requirements of Section 19.10.5.508, NMAC and will use the same reference area as cited in the Chino Mine Permit. This reference area is depicted on Map 4.

3.11 POST-CLOSURE MONITORING AND CONTINGENCY PLANS

The MMD guidance (1996) requires monitoring of revegetation during the bonding period to evaluate revegetation success, and NMWQCC Regulation 3107.A.11 requires the development of post-closure monitoring and contingency plans that are consistent with the terms and conditions of the applicable discharge plan. This section summarizes the general approach that will be used to meet these requirements.

3.11.1 Erosion and Drainage Control Structures

The reclaimed lands will be visually inspected for signs of excessive erosion (i.e., gullyng or extensive rilling), and significant erosion features will be mitigated to prevent future degradation of the site. Drainage channels, diversion structures, retention ponds, and auxiliary erosion control features will be inspected in accordance with professionally recognized standards (e.g., Natural Resources Conservation Service). Post-construction/reclamation inspection schedules will include provisions for periodic (annual or semiannual) and extreme event monitoring as appropriate for individual facilities.

Chino will report evidence of excessive erosion and/or structural failures to the appropriate agencies in a timely manner. A written report detailing the nature and extent of the problem and a corrective action plan will be developed within 75 days after the problem is identified.

3.11.2 Revegetation Success Monitoring

The reclaimed areas will be monitored periodically after the final grading and the initial establishment of vegetation. Regular inspections will be made to determine the initial success of the seeding. Thereafter, vegetation monitoring will be conducted periodically starting three to four years after initial establishment of vegetation on the reclaimed lands. Vegetation will be monitored more frequently in the years prior to the bond release determination than in the mid-term period. The monitoring frequency may be determined by the relative success of the reclamation during the mid-term evaluation. At a minimum, the vegetation will be monitored for two consecutive years prior to bond release. Monitoring in the Rocky Claim Expansion area will be conducted as part of the regular Chino Mine monitoring plan.

3.11.3 Surface Water Quality

Post-closure surface water monitoring locations and schedules will be determined based on Chino's obligations under the Multi-Sector General Storm Water Permit administered by the USEPA and as required under Discharge Permit 1340 (DP-1340) and the Chino Mine Closure/Closeout Plan. Chino's Storm Water Pollution Prevention Plan will be modified if necessary to address sampling locations and frequencies for storm water runoff from the reclamation area as well as periodic inspections of the reclamation area. However, storm water runoff from the Rocky Claim Expansion area will not discharge to waters of the US, but rather to the bottom of the Santa Rita Pit. At closure of the Chino Mine, water in the pit will be collected and treated for a duration of at least 100 years. Map 3 shows the location of surface water monitoring sites in Reservoir 9, a former tributary to Whitewater Creek, Reservoir 9 is monitored pursuant NMED ground water discharge plan DP-526. Monitoring of water in the pit sumps at the bottom of the Santa Rita Pit will continue during development of the Rocky Claim Expansion pursuant to DP-459. The results of the water quality monitoring associated with DP-459 and DP-526 will be reported to the NMED Ground Water Quality Bureau.

3.11.4 Groundwater Quality

Groundwater quality in the vicinity of the Santa Rita Pit will be monitored throughout the post-closure period as required under DP-1340. Because the expansion area is small relative to the existing operations at Santa Rita, no additional monitoring wells are proposed in association with this project. The monitoring schedule, analytical requirements, location, and construction specifications for DP-1340 monitor wells have been determined in consultation with the NMED. DP-1340 for Chino was initially approved on February 24, 2003. DP-1340 includes 119 conditions for monitoring, contingencies, closure, and financial assurance for several facilities that have the potential to affect ground water quality including the Santa Rita Pit. Map 3 illustrates the location of the existing groundwater and surface water monitor locations in the north mine area proximal to the proposed expansion. Post-closure monitoring will be performed in accordance with the Chino Mine permit GR009RE and DP-1340.

Contingency and abatement plans for post-closure water quality exceedances will be developed on a site-specific basis. In general, the contingency and abatement plans for groundwater will be consistent with the protocols established for NMWQCC Regulation. Thus, Chino will verify any potential exceedances and report them to NMED and prepare a corrective action plan for mitigation, and implement the mitigation measures pursuant to DP-1340. The corrective action plan will be developed and implemented in collaboration with the NMED.

4.0 MONITORING PLAN

Mining and monitoring of the expansion will be done in compliance with the permits listed in Table 6. With the exception of the MPO/CCP (this document), the other permits listed in Table 6 are in place.

TABLE 6
CHINO MINES COMPANY
APPLICABLE REGULATORY FRAMEWORK

Permit Name	Regulatory Agency	Purpose of Permit	Status
Storm Water/NPDES MSGP Authorization NMR05A945	USEPA	Protection of Surface Water – Clean Water Act	Pending EPA re-issuance of MSGP
NPDES Individual Permit No. NM0020435	USEPA	Protection of Surface Water – Clean Water Act	Issued June 18, 1999 Expired, pending renewal
Discharge Plan DP-459	NMED	Ground water discharge permit for the Santa Rita Open Pit	Issued June 15, 2005 Current
Groundwater Discharge Plans DP-1340	NMED	Supplemental Discharge Permit for Closure	Issued February 24, 2003 Current
NM Mining Act Permit No. GR009RE	NMEMNRD, MMD	Compliance with NM Mining Act Regulations – Closeout Plan and Financial Assurance	Issued December 18, 2003 Current
Plan of Operations MPO/CCP	BLM	Operations on Land Administered by BLM (43 CFR 3809)	Pending
MSHA ID # 29-00708	MSHA	Mine Safety & Training	N/A – Current

4.1 WATER QUALITY

Operations at the Chino Mine include a water quality monitoring plan which is a requirement of the New Mexico Groundwater Discharge Permits, issued by the New Mexico Environment Department. A Discharge Permit (DP-459) for the monitoring sites include groundwater wells and surface sample locations, which are shown on Map 3. The Discharge Permit requires quarterly monitoring of groundwater levels and groundwater quality to detect changes in groundwater that could occur from mining operations. The Discharge Permit also outlines sampling schedules, sampling protocols, and contingency requirements. A copy of the discharge plan, sampling sites and schedules, and sampling protocols are available from the NMED or from Chino. Chino currently operates under the terms of the groundwater permit DP-459.

4.2 AIR AND NOISE QUALITY

Chino's mining operations are currently in compliance with Federal and State air quality regulations. The proposed action will not require modifications to existing air permits or any additional air quality permits at Chino. The project area is a Class II area (State Designated Classification), and Chino does not conduct regular ambient air monitoring at the mine. The EPA records monitoring data for the region near Silver City, Bayard and Hurley, New Mexico. Monitoring data for the three closest stations is presented in Table 8, in Section 6.4.

4.3 REVEGETATION

Chino will conduct vegetation monitoring of both volunteer revegetation and re-seeded areas during the third year after reclamation seeding in a manner similar to the agreement with the MMD for the Chino Mine (Permit Revision 01-1 to Permit No. GR009RE). Monitoring will continue at least every other year and for two consecutive years prior to bond release. Revegetation monitoring will include, at a minimum, canopy cover, plant diversity, and shrub density. The canopy cover survey and shrub density survey will be conducted using the survey techniques approved by the MMD. See Section 3.10.2 for Revegetation Success Standards.

4.4 STABILITY

Chino commissioned state of the art slope stability analyses for mining purposes which are used by mine planners to ensure efficient design and safety for mine workers (Call and Nicholas 2000). The slope stability studies performed for the Santa Rita Pit indicate that the pit walls are stable from a large-scale failure perspective.

The study recommended a slope angle of 43 degrees; however Chino plans to construct the slope at an angle of 32 degrees in the area of the proposed pit expansion. The recommendation was based on results of bench-scale stability analysis. This coupled with the geology and bedding planes in this area will provide a stable slope. Steeper or shallower slopes may be warranted based upon site specific conditions encountered while mining. The geomechanical database coupled with the estimated rock mass strength, which was derived from compressive strength and disc tension test results, suggests that zones of low rock mass strength should be small and should not contribute significantly to slope instability along final pit walls.

Spalling and minor cut-slope failures are expected to occur on the bench-highwalls, creating wedges of unconsolidated materials that will eventually support vegetation on the volcanic tuff material. The slope gradients, solid thickness, and vegetation cover are expected to reach a steady state condition that is controlled by the geology, climate, and aspect of the site.

4.5 WILDLIFE

Chino will document wildlife use of reclaimed areas for a post-mining wildlife use in a manner similar to the agreement with the MMD for the Chino Mine (Permit Revision 01-1 to Permit No. GR009RE). Deer pellet group counts will be conducted quarterly (seasonally) beginning three years after reclamation has been completed. Bird diversity surveys will also be conducted quarterly (seasonally) beginning three years after reclamation has been completed. Results will be evaluated to determine wildlife use trends during re-establishment of a self-sustaining ecosystem.

In addition to proposed reclamation (Section 3.0), Chino will be establishing wildlife habitat features such as rock piles and or brush piles to promote floral and faunal diversity as part of nearby already approved reclamation activities.

5.0 INTERIM MANAGEMENT PLAN

Mining is scheduled to begin when all applicable permits are received. The mine will normally work two shifts per day, 365 days per year. Current plans call for the Chino Mine to be operated continuously until all economic reserves are exhausted or economic conditions become limiting. Unforeseen circumstances, however, could require intermittent shutdowns or curtailments.

Because the Rocky Claim Expansion project is of relatively short duration for the mine, curtailments are less likely during this project. If a period of non-operation were to occur, Chino will continue to comply with its Stormwater Pollution Prevention Plan and other environmental requirements. BMPs will be maintained to ensure compliance. Reclamation of the site would not commence until permanent closure of the site is eminent. Berms, signage, and any necessary public safety measures will also be installed.

During both short and long-term shutdowns, ground and surface water monitoring, as required by applicable permits will be performed.

6.0 OPERATIONAL AND BASELINE INFORMATION

Previous (Historical) Operations

The Chino (Santa Rita) copper deposits were known to the Apache Indians (Chino, 1995). The Spanish learned of the deposits by the 1770s and began development of the Santa Rita copper deposits in the early 1800s, when a land concession for the area was granted to Don Francisco Elguea by the Mexican government. Through most of the 1800s, the mine was leased from Elguea and his heirs, although Apache Indians prevented continuous working of the mine. Early mining methods used underground shafts that followed the larger ore bodies. Mined ore was transported to Mexico.

In 1909, the Chino Copper Company was formed and assumed ownership of the mine. Open pit mining operations at Santa Rita began in 1910 and have continued and expanded to the present. In 1911, the Chino Copper Company constructed a mill and concentrator at the current Hurley smelter site, to which the ore was transported by rail and concentrated. Ore that was not suitable for the flotation process was stockpiled near the pit, and tailing from that facility was deposited east and south of Hurley along White-water Creek. The Hurley smelter was constructed in 1939. In mid-1982, the Hurley mill and concentrator were replaced by a new mill and concentrator (together called the Ivanhoe concentrator) located closer to the pit.

In 1936 CMC started leaching operations of the low-grade ore stockpiles near the open pit and copper extraction at precipitation plants. In mid-1988, the SX/EW plant, constructed near the open pit, became operational, and additional leaching activities began in permitted areas.

Mining currently takes place on a three-shift-per-day, seven-days-per-week basis. Rock is broken using traditional drilling and blasting techniques. After blasting, the materials are loaded into haul trucks for delivery to the appropriate destination:

- Sulfide ore is delivered to the primary crusher west of the pit
- Leachable ore is delivered to leach stockpiles around the periphery of the pit
- Overburden is stockpiled in several locations around the pit

A computer-based truck dispatch system maximizes production by routing trucks to and from the shovels, crusher, and stockpiles. Additional detail on the equipment and processes involved in the mining operations can be found in the *Plan of Operations* (POO) (Chino, 1997a). Figure 2 of the 1997 POO describes ore processing operations used since 1982.

Current Conditions

Since this project is included within the South Mine Area Development Project study area, many of the resources described in this section were mapped and described in detail in the South Mine Area Development Project EA and associated studies (BLM 1996). More information can be found in the South Mine Area Development Project EA (BLM 1996) and the Chino Mine CCP.

Existing Santa Rita South Pit Mining Operations

Chino began mining oxide ore and waste from the South Area of the Santa Rita Pit in 1996. Total depth of the Santa Rita Pit is 2,100 feet at an elevation of 5,050 feet amsl. A sump and dewatering system is

installed in the bottom of the Santa Rita Pit, consisting of a barge-mounted pump and associated piping. The average annual pumping rate from the pit has ranges from 0 to 1,400 gallons per minute (gpm), however; the system is designed to pump 2,000 gpm. In 1996, Chino began mining a small extension on the south side of the Santa Rita Pit, which continues today (2006). A total of approximately 2,100 million tons of ore and waste rock were mined from the Santa Rita Pit by Chino and its predecessors.

6.1 BIOLOGICAL RESOURCES

Several biological surveys have been conducted at the Chino Mine. The most recent assessment occurred in 2005 during a 5-day site visit by a wildlife biologist. Other surveys include assessments by Golder Associates (1996) for threatened and endangered flora and wildlife surveys. Biological data for the area has been also been collected by public agencies including U.S. Fish and Wildlife Service, U.S. Forest Service, New Mexico Department of Game and Fish, and the New Mexico Natural Heritage Program (BLM 1997).

Vegetation

The Rocky Claim Expansion area is primarily composed of two vegetation communities; Desert Grassland Community and Coniferous and Mixed Woodland Community.

The Desert Grassland vegetation type in New Mexico occupies sites that were previously grassland (Dick-Peddie 1993). Under intensive grazing, invasive forbs and shrubs replace palatable native grasses. The Desert grassland vegetative type may border Chihuahuan Desert Scrub or Great Basin Desert Shrub at its lower (drier) boundaries and Plains-Mesa Grassland or Montaine Scrub at its higher, more mesic boundaries. The dominant grass for the Desert grassland vegetation is Black grama (*Bouteloua eriopoda*). Shrub and forb components are made of many different species, as expected from the ecotonal (transitional) position of this vegetative type. Most major shrub species of this vegetation type are also major species of the Montane Scrub, Great Basin Desert Scrub, and Chihuahuan Desert Scrub types.

The Coniferous and Mixed Woodland vegetation type is found in the Woodland and Savana Vegetation Zone in New Mexico (Dick-Peddie 1993). The Woodland and Savana Vegetation Zone is characterized by several features. The canopies are rarely closed and woodland trees are generally smaller in stature than “forest” species. Such woodlands, comprised of over 90% coniferous woodland and the rest mixed woodland, occupy 23% of the land area of New Mexico (Dick-Peddie 1993).

Colorado pinyon (*Pinus edulis*) is by far the most common pinyon of the pinyon-juniper community types of New Mexico (Dick-Peddie 1993). However, it is replaced by older pinyon (*P. discolor*) in the southwestern corner of the state. Alligator juniper (*Juniperus deppeana*) is the more common juniper species in New Mexico, whereas one seeded juniper (*J. monosperma*) is the most widespread juniper. Of these, the alligator juniper requires more moisture and appears to be more shade tolerant. About 40% of the pinyon-juniper community types in New Mexico have virtually no shrub layer, whereas, 60% have one to several understory shrub species (Dick-Peddie 1993).

One population of Special Status plant species was determined to be impacted by the 1997 South Mine Development Project EA (BLM 1997). This was the Mimbres figwort (*S. Macrantha*). The BLM allowed this development as there were other populations in the area.

Wildlife

The South Mine Development Project EA identified several wildlife species that are known or have the potential to occur in the vicinity of the Chino Mine. The proposed Rocky Claim Expansion Area is within the study area boundary of the South Mine Development Project EA, and wildlife species occurring in the expansion site are expected to be similar to those that occur in the surrounding area.

Species that were commonly observed during surveys include desert cottontail (*Sylvilagus audubonii*), rock squirrel (*Spermophilus variegatus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), Gambel's quail (*Callipepla gambelii*), bridled titmouse (*Parus wollweberi*), rufous-sided towhee (*Pipilo erythrophthalmus*), and the acorn woodpecker (*Melanerpes formicivorus*).

The 1997 EA references two peregrine falcons (*Falco peregrinus*), which at the time of the environmental review were listed as an endangered species. These falcons were observed in the area of the Kneeling Nun ridge during the environmental review for the South Mine Development Project. The BLM allowed this development as falcons were apparently accustomed to mining activities. In addition, the BLM imposed a 1000 foot buffer between proposed activities and the Kneeling Nun ridge. Since that review, the falcons have been removed from the endangered species list. Regardless, the Rocky Claim Expansion will not be closer to the Kneeling Nun ridge.

6.2 WATER RESOURCES

Surface Water

The proposed pit expansion would occur within the Santa Rita Creek and Whitewater Creek watershed. This watershed has a total basin area of approximately 10.6 square miles, and receives annual average precipitation of 17.39 inches (North American Weather Consultants 1987). A major portion of the precipitation occurs during the summer months. The highest recorded 24 hour precipitation event in the Santa Rita basin due to thunderstorm activity was 3.05 inches in July of 1969. Snowfall accumulates in the higher elevations during the winter months causing minor snowmelt runoff in the spring.

The headwaters of Whitewater Creek flow into San Vicente Arroyo and then to the Mimbres River about 30 miles south of Hurley. Surface waters from the proposed mining expansion will flow to the open pit.

An NPDES permit (Permit # NM0020435) allows Chino to discharge from Outfall 001 into Whitewater Creek and Outfall 002 into Lampbright Draw as shown on Map 3. Outfall 001 is identified as the "copper ore retention pond" discharge to Whitewater Creek. Outfall 002 refers to the "copper ore retention pond" discharge to Lampbright Draw. The permit stipulates that both outfalls are zero discharge outfalls except in the case of certain storm events where a volume equal to the difference in annual precipitation contributing surface runoff and the annual evaporation may be discharged.

Flooding potential within the Rocky Claim Expansion area is not believed to be significant. During runoff conditions there is runoff occurring in the area; however, it is limited to short periods particularly following high intensity storms.

Chino has incorporated into the project design, measures to mitigate erosion. Specifically, as vegetation is cleared, a berm will be constructed to prevent run-off towards Whitewater Creek. From here, activities (grading and blasting) will be sloped towards the pit (to the north). If berm construction for safety pur-

poses results in measurable sedimentation and/or erosion, silt fences will be constructed on the down gradient slope of the berm(s). Natural vegetation between the berm(s) and undisturbed land should provide an adequate filtering mechanism to mitigate any impact from this activity. BMPs outlined in the mine's Stormwater Pollution Prevention Plan will be employed to minimize erosion and discharge of suspended solids to Whitewater Creek.

No discharge of any process wastewater to any surface water course is planned for this proposed mining operation.

Groundwater

The Chino Mine is located within the Mimbres Valley Groundwater Basin. The groundwater system in the basin consists of a deep aquifer in the Gila Conglomerate where groundwater elevations range from approximately 6,000 feet amsl to the north and east of the Santa Rita Pit and decrease in a generally southerly direction to less than 5,000 feet amsl approximately 8 miles south of Hurley.

The Golder Study indicates that a hydraulic discontinuity exists in the vicinity of the Santa Rita Pit. A hydraulic discontinuity exists in an area where groundwater flow does not conform to the regional pattern of movement, in this case from north to south because of mining activities. The Pit is presently mined to an elevation of 5050 feet amsl. Groundwater collects in the pit bottom reservoir at this elevation. The pit bottom elevation is some 1200 feet lower than the surrounding groundwater elevation beneath the unmined topography that surrounds the pit. As a result of the depression in the water table elevation caused by the pit dewatering, a groundwater divide has developed, fully surrounding the pit beneath the topographically higher ground. This is commonly referred to as the pit capture zone.

Outside of the pit capture zone, groundwater flow generally follows surface topography, flowing from higher elevations to lower elevations. The overall direction of flow is from north to south, except in the region of the Santa Rita Pit. Groundwater elevations near Whitewater Creek at Hurley are known to be lower than the creek bed elevation, resulting in discharge from the creek to the groundwater system.

Groundwater from the Gila Conglomerate aquifer ranges from low to very high total hardness. The primary hardness constituent is calcium bicarbonate. Hardness is moderate between the groundwater from the limestone aquifers and groundwater from the volcanic units. Groundwater from the Colorado Formation and the Percha Shale that exists at Chino have naturally elevated calcium sulfate. Increased concentrations of sulfate as well as iron have been reported in groundwater in areas of sulfide mineralization. These elevated sulfate and iron levels are attributed to the natural oxidation of the sulfide minerals contained within the groundwater zones.

6.3 REGIONAL GEOLOGY

The Silver City region lies within a broad transitional zone between the Colorado Plateau and Basin and Range provinces. To the south and southwest, Paleozoic to Mesozoic sedimentary rocks and younger volcanic rocks are exposed in north to northwest-trending ranges separated by broad alluvial valleys. Northward, sedimentary formations thicken and form the broad highland plateau of the Colorado Plateau.

The geology in and around the Rocky Claim Expansion area consists mostly of the upper volcanics of Miocene Age known as the Sugarlump Tuff, the Kneeling Nun Rhyolite Tuff, and the Basalt and Basaltic Andesite Flows.

6.3.1 Geochemistry

The waste rock/overburden in the general vicinity of the Rocky Claim Expansion area occur primarily as volcanic tuff and as the Colorado formation as an altered siltstone shale. Limestone, sandstone, shale, intrusive dioritic rocks, volcanic breccia, tuffs and rhyolite which are net-acid-neutralizing, yield environmentally favorable conditions during operating and closure periods. The material that will be mined will be placed on existing permitted stockpiles/locations.

6.4 AIR AND NOISE

Air

Meteorological data is collected at the Fort Bayard, New Mexico, National Weather Service Station. This station is located approximately 5 miles west of the Santa Rita Pit and is considered to be representative of the site area. Southwestern New Mexico has a dry desert climate. Average annual rainfall is 15.7 inches (1897-1993) with July and August being the wettest months having average rainfalls between 3.2 and 3.4 inches. Annual snowfall is 10.4 inches falling mostly between December and March. Average maximum temperature varies from 52 degrees Fahrenheit in December and January to 87 degrees Fahrenheit in June and July. Average minimum temperatures vary between 25 degrees Fahrenheit in January and 58 degrees Fahrenheit in July. Winds tend to be moderate in this region with higher speed winds occurring during the springtime (BLM 1997).

Attainment status for pollutants within the project area is determined by monitoring levels of criteria pollutants for which National Ambient Air Quality Standards (NAAQS) and New Mexico Ambient Air Quality Standards (NMAAQs) exist. The applicable standards are presented in Table 7.

TABLE 7
AIR QUALITY STANDARDS

Pollutant	Averaging Period	New Mexico Standards	National Standards	
			Primary	Secondary
Carbon monoxide	1-hour	13.1	40,000 ug/m ³ (35 ppm)	---
	8-hour	8.7	10,000 ug/m ³ (9 ppm)	---
Lead	Calendar quarter	---	1.5 ug/m ³	1.5 ug/m ³
Sulfur dioxide	3-hour	---	---	1,300 ug/m ³ (0.5 ppm)
	24-hour	0.1	365 ug/m ³ (0.14 ppm)	---
	Annual	0.02	80 ug/m ³ (0.03 ppm)	---
PM ₁₀	24-hour	---	150 ug/m ³	150 ug/m ³
	Annual	---	50 ug/m ³	50 ug/m ³
PM _{2.5}	24-hour	---	65 ug/m ³	65 ug/m ³
	Annual	---	15 ug/m ³	15 ug/m ³
TSP	24-hour	150 ug/m ³	---	---
	7-day	110 ug/m ³	---	---
	30-day	90 ug/m ³	---	---
	Annual	60 ug/m ³	---	---
Ozone	1-hour	---	235 ug/m ³ (0.12 ppm)	235 ug/m ³ (0.12 ppm)
Nitrogen dioxide	24-hour	0.10 ppm	---	---
	Annual	0.05 ppm	100 ug/m ³ (0.05 ppm)	100 ug/m ³ (0.05 ppm)
Hydrogen sulfide	1-hour	0.01 ppm	---	---
Total reduced sulfur	½-hour	0.003 ppm	---	---

Source: EPA website: www.epa.gov/airs/criteria.html, New Mexico ambient air quality standards (NMAC Title 20, Chapter 2, Part 3) downloaded from New Mexico website: www.nmenv.state.nm.us/Common/regs_idx.html

New Mexico has attainment/non-attainment designation with regard to five pollutants: total suspended particulate matter (TSP), sulfur dioxide, carbon monoxide, nitrogen dioxide, and ozone. The area around the pit expansion is designated as Class II (state-designation).

Inhalable particulate, or PM₁₀, is the criteria pollutant of greatest concern for the proposed pit expansion. The EPA has recorded monitoring data for the region. Monitoring data for PM₁₀ for the last three years with complete records is provided in Table 8.

TABLE 8
MONITORED PM₁₀ DATA (ug/m³)

Station	Year	Number of Samples	1 st Maximum 24-hour	2 nd Maximum 24-hour	Annual Mean
Cobre (Monitor ID 3501700018110202)	1998	62	35	33	18.4
	1999	60	48	43	21.5
	2000	58	44	34	19.1
	2001	59	34	28	17.1
	2002	33	62	46	21.5
	2003	No data	No data	No data	No data
	2004	No data	No data	No data	No data
Hurley (Monitor ID 350170009811021)	1998	58	35	29	16.5
	1999	58	51	48	19.5
	2000	57	38	33	16.4
	2001	No data	No data	No data	No data
	2002	No data	No data	No data	No data
	2003	No data	No data	No data	No data
	2004	No data	No data	No data	No data
Silver City (Monitor ID 350170002811021)	1998	56	34	33	17.8
	1999	59	52	48	20.7
	2000	58	48	43	19.2
	2001	63	65	53	17.6
	2002	60	62	51	20.1
	2003	57	47	37	18.9
	2004	59	44	42	17.3

EPA AIRData Website: www.epa.gov/aqspubl1/air_quality_tables.html

Noise

Noise in the surrounding area has not been surveyed. However, ambient noise levels typical of remote mining areas is around 30 L₉₀ dBA (BLM 1997). At the Rocky Claim Expansion, the closest residences occur at unincorporated Santa Rita approximately 2 miles to the northwest.

Noise level criteria used for impact analysis are typically based on recommendations from the EPA (1974) and on standard engineering practices. The EPA has determined that equivalent noise levels (L_{eq}) greater than 70 A-weighted decibels (dBA) to be a risk to public health and welfare, and day-night noise levels (L_{dn}) greater than 55 dBA to be an annoyance to humans. These values are typically used to assess the noise impact from earth-moving equipment. The U.S. Bureau of Mines (1980) developed annoyance and damage criteria for noise levels produced from blasting. The Bureau of Mines has determined that peak linear decibel levels (dBL) should not exceed 129 to minimize annoyance, and should not exceed 134 dBL to minimize the possibility of structural damage.

Over large distances, such as those between the receptors and the pit, air blast propagation is strongly dependent on wind, temperature, and terrain conditions. Under ideal propagating conditions (i.e., a receptor located downwind from the blast during a temperature inversion), air blasts could be audible at any of the identified residences. Measures to reduce potential effects include scheduling blasting during daytime operations.

6.5 LAND USE

The BLM and Chino are the entities that control land within the proposed pit expansion area. Total area associated with the MPO/CCP is approximately 20 acres, all of which occur on BLM land. The activities on land owned and controlled by Chino outside of the BLM's 20 acres have already been permitted through the appropriate agencies.

The project area is located in Grant County. The project does not conflict with local land use plans or regulations. BLM land is managed according to guidelines and policies outlined in the Mimbres Resource Management Plan (BLM 1993). Mining is an allowed land use in the Mimbres Resource Area, in accordance with the multiple-use policies directives outlined in the Federal Land Policy And Management Act of 1976.

Existing land use in the vicinity of the pit expansion is influenced by past and ongoing mining operations, including the Chino Mine. The area of the pit expansion has experienced some past mining activity, but is generally vacant land that can be used by wildlife.

6.6 CULTURAL RESOURCES

The project area was subjected to two intensive pedestrian surveys for cultural resources by Archaeological Services in 1995 and 1996. During these surveys, three newly recorded sites and fifteen isolated occurrences were recorded. One site was considered eligible for listing on the National Register of Historic Places and required mitigation (data recovery) prior to mine development. The planned Rocky Claim Expansion will not impact any known or recorded sites or Survey Monuments.

6.7 OTHER INFORMATION

6.7.1 Mitigation

Wildlife

Effects to wildlife will be minimal. The previous completed South Mine Development Environmental Assessment (EA) included a survey for threatened, endangered and sensitive species. The Rocky Claim Expansion Area was included in these surveys. The Finding of No Significant Impact/Decision Record (FONSI/DR) noted the two peregrine falcons (endangered species) in the area of the Kneeling Nun ridge. However, the FONSI/DR noted that mining activities could not occur within 1000 foot buffer zone of the Kneeling Nun ridge. The justification for this distance was that current and historical operations took place with no apparent adverse impacts on the peregrine falcons.

Vegetation

As noted earlier, *S. Macrantha* (Mimbres Figwort), a special status plant species occurs in and around the Santa Rita Mine area. In the previous environmental review (1996), the BLM concluded that there would be little or no threat to the species, as there were numerous other populations in the area.

Section 3.1 of the reclamation plan specifies the requirements for revegetation. During subsequent monitoring of the revegetation success, adjustments will be made to the reclamation plan as needed.

Water Quality

Chino will continue the water quality sampling plan and maintain water quality improvement actions such as the systems that capture seepage from historic mining operations.

The Rocky Claim Expansion will operate under plans and permits that address the prevention of surface and groundwater pollution such as the Ground Water Discharge Permit issued by the New Mexico Environment Department, Ground Water Quality Bureau, the Chino Emergency Response and Spill Contingency Plan, and the Chino Storm Water Pollution Prevention Plan.

Air and Noise

The haul road (when present and used) will be watered during haul operations to reduce dust emissions. Sufficient watering will be applied to control particulate emissions outside of the permit area. The reclamation plan addresses issues of revegetation and monitoring of the success of reclamation outside of the proposed pit area (the safety berm). Blasting will occur during daylight hours to avoid nighttime noise effects from blasting to receptors.

Cultural Resources

If previously unknown and unrecorded cultural resources are located during the mining process, activities around the resources will stop and the BLM and State Historic Preservation Officer will be notified.

Other Mitigation

Chino will implement the reclamation plan already approved by MMD and if necessary incorporate conditions imposed by BLM as part of their environmental analysis. The plan will comply with environmental protection measures specified by the BLM (43 CFR-3809) and the MMD/NM Mining Act (Section 19.10.5.508).

During ground disturbing activities, Chino will, to the extent possible, protect survey monuments, reference monuments, bearing trees and other survey reference points. Should it be necessary to remove a survey point during operations, the appropriate BLM officer will be notified.

7.0 RECLAMATION COST ESTIMATE

The costs associated with the proposed reclamation plan have already been calculated, reviewed and approved by MMD. This estimate has been prepared in accordance with the protocols established for the Chino Mine. Chino proposes that the BLM be added to the financial assurance posted and approved by MMD. Alternatively, Chino will prepare a separate reclamation cost estimate for BLM review and approval once all environmental analysis and mitigation has been agreed upon. The closure costs will be detailed in a separate submittal following a determination by the BLM and MMD that the MPO/CCP is approvable. The cost estimate will include third-party calculated numbers that include contingencies per 43-CFR 3809 and the NMMA. No surface disturbing activities associated with this request will be initiated until adequate financial assurance is accepted by the BLM.

8.0 PREVENTION OF UNNECESSARY AND UNDUE DEGRADATION

Chino will prevent unnecessary or undue degradation on public lands by complying with the performance standards found in 43 CFR 3809.420. Section 9.0 of this Plan provides a table indicating where the general and specific performance standards are addressed.

Chino will prevent unnecessary or undue degradation on public lands by assuring that all operations are designed to be reasonably incident to the mining operations that will be carried out on BLM lands. As defined in 43 CFR 3715.0-5, a person of ordinary prudence would determine that all Chino activities, methods, and equipment are reasonably incident to prospecting and mining the valuable mineral deposit (copper) on public and private lands. Essentially, this means that there will be no activities, expenditure of labor or resources, or construction of structures that are not for the express purpose of defining, developing, mining, and processing the copper deposit on public and private lands. In accordance with 43 CFR 3715.2, 3715.2-1, and 3715.3-2, the following information is provided to the BLM. The activities that Chino will be engaged in on public lands are further described in Section 2.0 of this Plan.

Chino will be engaged in certain activities on public lands described in Section 2.0 of this Plan. As described, all aspects of the proposed mining operation and occupancy of public lands will involve the mining and processing of the locatable copper ore. The amount of materials other than copper ore that will be removed from public lands, i.e., vegetation and waste rock, will only be that which is required to mine the ore; and therefore would be considered reasonably incident.

The activities and occupancy of public lands will constitute substantial regular work. Upon approval of this Plan, Chino will begin the operations as described in Section 2.0. According to the schedule of operations (Section 2.7), the work will be continuous (assuming economic conditions warrant). Activities will include drilling, blasting, loading, and hauling of ore and waste rock, as described in Section 2.2. Post-mining activities on public lands will include reclamation, as described in the state-approved reclamation plan (Closure/Closeout Plan) and Section 3 of this MPO/CCP.

Chino has determined, through exploration activities, that the mineral resources to be mined are economically recoverable. Chino has determined that there are approximately 880 million pounds of salable copper and 670,000 pounds of salable moly that will be mined as a result of this MPO/CCP. As this proposed operation is an extension of an existing pit, there is a reasonable expectation that it will result in the extraction and beneficiation of copper and moly ores. Recovery of these minerals in accordance with this Plan constitutes a major investment in equipment and resources and would not be undertaken without this expectation.

In accordance with 43 CFR 3715.7, upon Plan approval, BLM field staff will be able to physically verify the activities described in this MPO/CCP. BLM will be allowed access to the site for a review of all activities on public lands.

Chino utilizes operable equipment at the Chino Mine that is appropriate, both in terms of physical requirements and cost effectiveness for the job that is undertaken. All equipment is routinely maintained according to manufacturer's suggestions and industry standards at existing facilities at the Chino Mine. The appropriate equipment is presently operable and located at the mine site adjacent to the public lands proposed for mining in this Plan. A list of this equipment that will be used in the execution of this plan is provided in Section 2.0 of this Plan.

Chino's occupancy of public lands will also protect valuable minerals from theft; protect the equipment from theft or loss; protect the public from this equipment; and protect the public from hazardous situations on public land. The current mine and equipment is protected by restricted public access to the mine site, facilities, and equipment. There are fences and locked gates and signs posting the property that do not allow public access. This is for both the protection of the public and of the Chino assets. This protection will be extended to the public lands upon approval of this Plan. Mine employees and guests and visitors to the mine are required to comply with a mine safety plan and are equipped with appropriate and required safety equipment. Visitors to the site are required to check in prior to entrance through the main gate, which includes a manned checkpoint. A safety briefing is provided to visitors prior to entrance into the mine site. As this Plan is an extension of an existing mine operation, all safety and protection procedures currently in place will be extended to operations on public lands.

The proposed occupancy will also be temporary in nature. Mining of public lands is scheduled to take up to 2.5 years to complete (see Section 2.7). Reclamation of the lands is described in Section 3.0 of this MPO/CCP. In addition to the proposed mining activities, Chino has already installed support facilities as a result of previous submittals and approvals to the MMD and BLM.

The proposed occupancy meets the conditions specified in 43 CFR 3715.2 and 3715.2-1, as Chino has completed substantial regular work that will lead to the extraction and beneficiation of minerals. It will involve observable on-the-ground activity (mining) that BLM may verify, and Chino will use appropriate equipment, listed in Section 2.2 of this Plan, for this mining and beneficiation. All security operations in place will be maintained to protect minerals and equipment from theft or loss. The Chino property is fenced and gated. The public is protected from surface uses, existing and proposed, by security measures including fencing, gates, security stations, and patrols. Additionally, mining activities are planned for two shifts per day, 365 days per year.

No new permanent structures are planned for the Rocky Claim Expansion. Temporary structures will include an electric service line extension. The haul road into the BLM portion of the Santa Rita Pit will be extended onto public lands. A fence has already been constructed along the previously approved mine permit boundary. All structures/facilities, except the fence, will be removed upon cessation of mining.

Signs have already been posted declaring the property to be off limits to the general public. Excluding the public from access to these lands is required to protect both the Chino investments and resources and the public from safety hazards. Access to the public land will be by means of the existing mine access.

No public lands, not being mined or under the control of Chino, will be excluded from public access. Access to these lands, surrounded by private land, will remain open to the public to the extent that it is currently accessible.

9.0 APPLICABLE PERFORMANCE STANDARDS

TABLE 9
PERFORMANCE STANDARDS

General Performance Standards	Location in Plan	Comment
Technology and Practices	Section 2.2	
Sequence of Practices	Section 2.7	
Land-Use Plans	Section 6.5	
Mitigation	Section 6.7.1	
Concurrent Reclamation	Section 3.0	Where activities are completed and no further access or activity is proposed, Final (concurrent) Reclamation will be initiated.
Compliance with Other Laws	Section 1.0; 4.0	
Specific Standards		
Access Roads	Section 2.8	
Mining Wastes	Section 2.2.4	
Reclamation	Section 3.0; 7.0	Reclamation Plan to be approved by the BLM
Air Quality	Section 4.2	
Water Quality	Section 4.1	
Solid Wastes	Section 2.2.4	
Fisheries, Wildlife and Plant Habitat	Section 4.3;4.5	
Cultural and Paleontological Resources	Section 6.6	
Protection of Survey Monuments	Section 6.6	
Fire	Section 2.5	Mine safety plans
Acid-Forming, Toxic or Other Deleterious Materials	Section 2.4	
Leaching Operations and Impoundment	Not Applicable	
Maintenance and Public Safety	Section 2.5	Mine maintenance and mine safety plans

10.0 ACKNOWLEDGEMENT

It is understood that should the nature of the operation change or be modified, a plan of operations and reclamation plan may be required.

A bond, equivalent to the actual cost of performing the agreed upon reclamation measures will be required before this plan can be approved. Bonding and any bond reduction amount will be set on a site specific basis by the lead agency in coordination with the cooperating agency.

It is understood that any information provided with this notice that is marked confidential will be treated by the agency in accordance with that agency's laws, regulations, or rules.

Date

Richard N. Mohr, President
Chino Mines Company.

cc: Attention: Karen Garcia
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11.0 REFERENCES

- BLM. 1996. Environmental Assessment for the Chino Mines Company, South Mine Area Development Project. USDI-BLM, Las Cruces District. September 30, 1996.
- BLM. 1993. Mimbres Resource Area, Resource Management Plan.
- Call & Nicholas, Inc. 2000. Chino Pit – Slope Design Studies. Reports prepared for Phelps Dodge Corporation.
- Construction Equipment Research Laboratory, 1978. *Construction-Site Noise Control Cost-Benefit Estimating Procedures*. Champaign, IL: US Department of Defense, Department of the Army.
- Dick-Peddie, W.A., 1993. *New Mexico Vegetation, Past, Present and Future*. Albuquerque, NM: University of New Mexico Press.
- Golder Associates Inc., 1994. *Mining Operation Site Assessment for the Chino Mine*. Redmond, Washington: Golder Associates Inc.
- Grant County, 1994. *Grant County, [New Mexico] Comprehensive Land Use Plan*.
- Hawley, 1986. Physiographic Provinces in *New Mexico in Maps*, edited by Jerry L. Williams. Albuquerque, NM: University of New Mexico Press.
- Huff, Charles, 1996. Personal communication between Henry Sauer of Golder Associates Inc. and Charles Huff. January 1996.
- McDonald, Charles, 1995. Personal communication between Henry Sauer of Golder Associates Inc. and Charles McDonald of the US Fish and Wildlife Service, Albuquerque, NM. November 1995.
- Menzer, Fred, 1995. Personal communication between Tom Williams of Golder Associates Inc. and Fred Menzer of CMC. November 1995.
- New Mexico Air Quality Bureau (NMAQB), 1990. *Air Quality Bureau Annual Report, 1985-1988*. Santa Fe, New Mexico: State of New Mexico Health and Environment Department, Environmental Improvement Division, Air Quality Bureau.
- New Mexico Air Quality Bureau (NMAQB), 1991. *Air Quality Bureau Annual Report, 1989-1990*. Santa Fe, New Mexico: State of New Mexico Health and Environment Department, Environmental Improvement Division, Air Quality Bureau.
- New Mexico Air Quality Bureau (NMAQB), 1994. *Air Quality Bureau Annual Report, 1991-1993*. Santa Fe, New Mexico: State of New Mexico Health and Environment Department, Environmental Improvement Division, Air Quality Bureau.
- New Mexico Department of Game and Fish (NMDGF), 1988. *Handbook of Species Endangered in New Mexico*. Santa Fe, NM: New Mexico Department of Game and Fish.

- New Mexico Department of Health, 1992. *Selected Health Statistics, New Mexico 1991*. Albuquerque, NM: Office of Vital Records and Health Statistics
- North American Weather Consultants, 1987. *Probable Maximum Precipitation Estimates for Santa Rita Pit, Whitewater and Bolton Drainages Located in Southern New Mexico*. Salt Lake City, UT: North American Weather Consultants.
- Ruiz, V., 1995. Personal communication between Tom Williams of Golder Associates Inc. and Victor Ruiz of the Southwest New Mexico Council of Governments. November 1995.
- Schmidly, D.J., 1991. The Bats of Texas. (W.L. Moody, Jr., Natural History Series. No 11). College Station, TX: Texas A & M University Press.
- Sivinski, Robert, 1995. Personal communication between Tom Williams of Golder Associates Inc. and Robert Sivinski of the New Mexico Energy, Minerals, Natural Resources and Forestry Department. November 1995.
- Sivinski, Robert, 1996. Personal communication between Tom Williams of Golder Associates Inc. and Robert Sivinski of the New Mexico Energy, Minerals, Natural Resources and Forestry Department. March 1996.
- Sivinski, Robert and Karen Lightfoot, 1995. *Inventory of Rare and Endangered Plants of New Mexico, 3rd edition*. (Miscellaneous Publication No. 4). Santa Fe, NM: New Mexico Forestry and Resources Conservation Division, Energy Minerals and Natural Resources Department. August.
- Trauger, Frederick D., 1972. *Water Resources and General Geology of Grant County, New Mexico*. (New Mexico State Bureau of Mines and Mineral Resources Hydrologic Report 2).
- US Bureau of Land Management, BLM Manual Section 6840.06.
- US Bureau of Land Management, 1986. *BLM Visual Resources Contrast Rating Handbook*. US Department of the Interior, Bureau of Land Management.
- US Bureau of Land Management, 1988. *National Environmental Policy Act Handbook*. Washington, D.C.: US Bureau of Land Management.
- US Bureau of Land Management, 1993. *Mimbres Resource Management Plan*. Las Cruces, New Mexico: US Department of the Interior, Bureau of Land Management, Las Cruces District Office, Mimbres Resource Area. December.
- US Bureau of Land Management, 1995. Personal communication with Mr. T. Custer concerning Native American Religious Concerns. US Department of the Interior, Bureau of Land Management, Las Cruces District Office, Mimbres Resource Area.
- US Council on Environmental Quality (CEQ), 1978. *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. Washington, D.C.: Executive Office of the President, Council on Environmental Quality.

- US Council on Environmental Quality (CEQ), 1981. *Questions and Answers About the NEPA Regulations*. Memorandum for Federal NEPA Liaisons, Federal, State, and Local Officials and Other Persons Involved in the NEPA Process, March 15, 1981. Washington, D.C.: Executive Office of the President, Council on Environmental Quality.
- US Department of Commerce, 1990a. *1990 Census of Population, Social and Economic Characteristics – New Mexico*. Washington, D.C.: US Department of Commerce, Bureau of the Census.
- US Department of Commerce, 1990b. *1990 Census of Population, Population and Housing Unit Counts – New Mexico*. Washington, D.C.: US Department of Commerce, Bureau of the Census.
- US Environmental Protection Agency, 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. (NTID 300.1).
- US Soil Conservation Service (USSCS), 1981. *SCS Critical Area Planting Standards and Specifications*.
- US Soil Conservation Service (USSCS), 1983. *Soil Survey of Grant County, New Mexico, Central and Southern Parts*. Washington, D.C.: US Department of Agriculture, Soil Conservation Service.